

COMPUTER COMMUNITY

\$2.00 A COPY; \$44/YEAR

OCTOBER 18, 1984

VOL. XVII, NO. 42



In Depth
If only every
computer
could talk
Follows 76

In Depth
Making
connections
in the shadow
of the main-
frame ID/7

**Hardware,
yes.
Software,
no.**
Sequoia first user
speaks up/87

Small firm's \$99 bargains a big success

By John Gallant
CW Staff

JACKSON, Miss. — By any standard, Britz Publishing, Inc. is clearly not your average supplier of software for the IBM System/38 and related minicomputers.

With three employees, including only one software designer, Britz Publishing has sold more than 1,900 applications and utility packages for IBM System/32, 34, 36 and 38 minis in less than two years to customers such as International Paper Co., Chase Manhattan Bank, Borden, Inc., Coca-Cola Co. and even IBM itself. The tiny company, which also pub-

See SOFTWARE page 6

Burroughs processors beef up mid-range line

By Tom Henshaw
CW Staff

NEW YORK — Burroughs Corp. enhanced its mid-range processor line last week with two products: a low-end addition to its A series of mainframes and a multiuser, AT&T Unix-based enhancement to its XE line of superminicomputers. Highlights of the announcement include the following:

■ The A3, a three-model line of medium-range mainframes that Burroughs said competes with IBM's System/38 and 4361 products. The line consists of the Models D, F and K, which range in price from \$196,000 to \$450,000. The entry-level A3 Model D offers roughly half the internal performance of Burroughs' larger A9 mainframe. The dual-processor A3 Model K offers roughly 10% less internal performance than the entry-level A9, according

to the company.

■ An enhanced version of Burroughs' MCP operating system, Release 3.5, which the company announced to complement its A3 processors. The release can be used with Burroughs' A9, B5000, B6000 and B7000 series mainframes, as well as with the newly announced A3.

■ A series of optional modular software productivity tools that are collectively called the Interpro package (see related story page 4).

■ The XE 560 multiuser system, which marks the first time Burroughs has offered a version of AT&T's Unix operating system, called Centix, on any of its products. An extension of the older XE 530, the 560 line ranges in price from \$45,000 for an entry-level configuration to \$102,856 for a large configuration. Based on Motorola.

See DEBUTS page 4

TOP OF THE NEWS

■ A watered-down DP crime bill was passed by the U.S. Congress and was expected to be signed by President Reagan. The bill does not address illegal entry into most private sector computers. Page 2.

■ User concern is mounting over Prime Computer, Inc.'s bundled hardware/software maintenance policies. Page 6.

■ Future shock? IBM's proposed purchase of Rolm Corp. has brought under scrutiny the fate of cooperative agreements that Rolm has hatched with other vendors, such as Data General Corp. Page 8.

■ Wang Laboratories, Inc. declared war on the office typewriter with the introduction of a low-cost microcomputer earmarked for the secretarial market-place. Page 9.

■ AT&T continues to shorten its private-line order backlog, but users still agree that problems abound, and they point the finger at divestiture. Page 12.

■ Meeting of the lines. Digital Equipment Corp. rolled out a series of products allowing DEC users to connect to IBM's Systems Network Architecture. Page 14.

■ An industry association is pushing for higher Centrex services prices. The North American Telecommunications Association has also petitioned the Federal Communications Commission to prevent telephone companies from offering enhanced versions of Centrex. Page 77.

■ A Virginia insurer bought 2,000 Data General Corp. laptop computers for resale to insurance sales agents. Observers, meanwhile, predict that the key to success in the laptop arena is IBM compatibility. Page 83.

PRODUCT SPOTLIGHT

Multifunction micro software plays to mixed reviews



By Eric Bender
CW Staff

Despite all the television advertisements and print hoopla, this year's generation of multifunction software packages for the

IBM Personal Computer and compatibles has found a mixed reception.

Often applauded for their power and range, the new all-in-one integrated programs, such as Ashton-Tate's Framework and Lotus Development Corp.'s Symphony, typically combine spread-

sheet, word processing, data base management, graphics, communications and other functions. Sophisticated microcomputer users are buying up thousands of the packages, but many others complain that the software is cumbersome.

On the up side, some users rave about the new programs, which offer a rich variety of features, including some common commands and quicker switching between functions than stand-alone applications permit.

"I've spent an easy 1,500 hours on the program," said Gentry Simmons, a mar-

keter and financial planner with Manufacturers Financial Group in Nashville. Simmons, who uses Context Management Systems, Inc.'s Corporate MIRA to build personal financial plans for his clients, enthusiastically recommended the package. "I use the spreadsheet, graphics, data base manager, word processing and forms management. I've left Context on [the microcomputer] for weeks and never put anything else on."

But with potential customers becoming more wary, overall acceptance of the

See IBM page 30



He's Out!

Stretching for that extra measure, one analyst is using computers to manipulate statistics on every pitch and hit in major league baseball. But the San Diego Padres and Detroit Tigers relied on traditional means to reach the World Series. Story page 10.

AT 840501V7HULVWVA #C#NS
UNIVERSITY MICROFILMS INTL
SERIALS PUBLICATIONS
300 N ZEEB RD
ANN ARBOR MI 48106

NEWS

Eleventh hour congressional OK for DP crime bill

By Mitch Davis
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Congress, just before adjourning last week, passed a limited computer crime bill covering unauthorized access to computers used by the federal government, banks and credit bureaus, but not other private sector computers.

The House of Representatives passed the new version Wednesday night, Oct. 10, as part of the anti-crime amendments to the stopgap budget bill, and the Senate passed it Thursday, sending the first major computer crime bill to President Reagan, who is expected to sign the whole package into law.

Coverage of most private sector computers was stripped from the legislation (formerly H.R. 5616) in an Oct. 5 compromise with the Senate, which wanted no computer crime legislation this year, congressional aides said.

Congressional aides reported that Rep. William J. Hughes (D-N.J.) fought to gain Senate acceptance of the whole computer crime bill, which was passed twice by the House of Representatives [CW, Oct. 8], but that Sen. Paul Laxalt (R-Nev.) insisted more study was needed before expanding federal jurisdiction to cover

private sector computers.

Out from the legislation were felony and misdemeanor charges for unauthorized access of computers used in interstate or foreign commerce where the financial loss topped \$5,000 in a year. Laxalt and Hughes

ties implications of the legislation.

"He is very concerned about granting broad federal jurisdiction that permits federal agents to traipse about with impunity in the data banks of individuals and corporations," the aide said.

'Laxalt is very concerned about granting broad federal jurisdiction that permits federal agents to traipse about with impunity in the data banks of individuals and corporations.'

— a congressional aide

indicated they will hold hearings and will continue legislative work in this area next year, the aides reported.

Specifically, a congressional aide said, Laxalt wants to hear expert testimony about whether the legislative language is properly drafted so it can be enforced by prosecutors, because the U.S. Department of Justice has criticized the Hughes bill as too difficult to enforce. (The Senate did not hold hearings on the matter this year.)

In addition, the aide said, Laxalt wants more study of the civil lib-

The latest version of the computer crime legislation would establish three forms of computer crimes under federal jurisdiction:

■ It would prohibit unauthorized access of a computer to obtain classified information that protects national security. This felony would carry a maximum penalty of 10 years in prison and/or a \$10,000 fine.

■ It would prohibit the unauthorized access of a computer to obtain financial information that is protected from disclosure by the Right to Financial Privacy Act and the Fair

Credit Reporting Act. This misdemeanor provision was designed to prohibit hacking into financial and credit data bases, such as the alleged security breach of the credit files of TRW, Inc.'s Information Services Division in Orange, Calif. [CW, July 2].

■ It would prohibit unauthorized access of a computer owned by or operated for the federal government, when the perpetrator knowingly uses, modifies, destroys or discloses information in that computer. Under the bill, these misdemeanors carry a maximum penalty of one year in prison and/or a \$5,000 fine.

The third provision has prompted criticism from the American Civil Liberties Union on grounds that it could allow prosecution of government "whistle blowers," insiders who disclose government waste and abuse.

The Justice Department also has opposed the Hughes bill, asserting it is poorly drafted, difficult to enforce and an intrusion on state authority [CW, Aug. 20].

The Data Processing Management Association, the EDP Auditors Association, the Information Industry Association and the American Bar Association have generally supported the enactment of some form of federal computer crime bill.

Tell it to the hot

Based on the way you've been reading the most complete information available, now good news and forward motion are yours.

Are you interested in the most sophisticated of DP technology in your company? Have you implemented successful cost-cutting strategies? Is something in your DP shop not working as designed? Know any testing haven't heard any hot news about vendors? Are you aware of technol-

ogy of your

company? If so, we'd like to hear from you. We're looking for people who are interested in the most sophisticated of DP technology in your company. We're looking for people who are interested in the most sophisticated of DP technology in your company. We're looking for people who are interested in the most sophisticated of DP technology in your company.

CORRECTIONS

A chart accompanying "Integrated DBMS paving the way to one-stop shopping" [CW, Sept. 24] gave an incorrect figure for the percentage of DP installations planning to buy IBM's DB/1 data base management system. The correct figure is 18.7%.

The story, "AT&T links first remanufacturing plant" [CW, Oct. 1] on an agreement between Ducommun, Inc.'s Data Systems Division and AT&T, incorrectly described the formation of the new value-added distributor.

Ducommun's new Data Systems Division will absorb ESO Distribution, which was a unit of Ducommun's Kierulff Electronics systems group.

NEWS SUMMARY

Aiming to improve user productivity, Burroughs Corp. announced a series of six modular software tools/4

Burroughs Corp. tossed its hat into the multuser AT&T Unix workstation ring with a high-end addition to its XE line of supermicrocomputers/5

Users of Prime Computer, Inc.'s Prime operating system are drawing battle lines over the company's hardware/software maintenance policy/6

The proposed merger between IBM and Rpm Corp. raised questions about various cooperative agreements between Rpm and other computer companies/6

Wang Laboratories, Inc. launched an attack in the office typewriter war with its announcement of a multitasking computer designed for secretaries/9

The author of a pitch- and hit-tracking software program is working to bring computer analysis into the baseball diamond/10

CW at Communications Managers Association: Serving existing leased lines is proving to be as nettlesome a problem as private-line order backlogs, managers reported/12

CW at Intelsat '84: Digital Equipment Corp. announced a family of products that allows DEC system users to connect to IBM's Systems Network Architecture... Minicomputers will serve as police to patrol the growing number of micro-to-mainframe data base links, industry observers said/14,16

CW at Society for Information Management: Terminals edged personal computers as the preferred means of desktop computing for attendees interviewed... Office automation systems should be used as a weapon to crush competition, a Harvard University professor said... A child's viewpoint — intuitive, flexible and optimistic — is best suited for dealing with the coming microcomputer revolution, according to one speaker/18-22

M&M Mers Co. was relieved of a software company's bid order when the request was overruled in U.S. District Court/24

Academia, government and business are cooperating in a Scottish foundation's effort to develop fifth-generation software tools/24

The Israeli pavilion at Info '84 showcased national products, sought dealers and found users similar worldwide/26

The private sector must act on VDT concerns before the government does, a Columbia University professor said recently/27

Implementing a successful office automation strategy deals with credibility and office politics more than technology, according to a consultant at Info '84/40

A Boston law firm automated its office to give it an edge over its competitors/42

Purchasing telecommunications systems via a focal point at the recent convention of the North American Telecommunications Association/44

Explosive growth in corporate micro-computers is resulting in many innovations, a product manager said at the Express Users Group conference/45

IN DEPTH Talking computers/Followers 76 Making connections/80/7

Washington Update/26 International Report/38 Turnaround Time/67 Calendar/68

EDITORIAL/60 SOFTWARE & SERVICES/63 COMMUNICATIONS/77 SYSTEMS & PERIPHERALS/87 MISCELLANEOUS/93 COMPUTER INDUSTRY/107

ADRWARE

ADR/DATACOM/DB

From idea to application,
we get you there faster.

Faster than Cullinet.
Faster than Software AG.
Faster than Cincom.
Much faster than IBM.

ADR/DATACOM/DB

Has the only migration
software that converts
your applications from
VSAM to a relational
data base management
system. Overnight.

ADR/DATACOM/DB

The only widely
installed relational data
base management
system being used for
high volume update
applications. Today.

ADR/DATACOM/DB

The only relational
data base management
system that does the
big jobs as easily as the
small jobs.

We've taken state of the art to a new state: Easy and available.
Before you make a software decision mail in the coupon below.
Or call in N.J. (201) 874-9000 or toll free
1-800-ADR-WARE.

☐ Please send me more information about ADRWARE.
☐ Please send me information about ADR seminars.

APPLIED DATA RESEARCH INC.
Route 206 & Orchard Road, CN-6, Princeton, NJ 08540

Name _____

Position _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone Number _____

Computer Equipment _____

ADRWARE
From idea to application,
we get you there faster.

NEWS

Tools target productivity

NEW YORK — Claiming to have made its largest step in a decade toward making its mainframes easier to use, Burroughs Corp. last week announced a modular series of six software tools aimed at improving user productivity.

Collectively called the Interpro series, the six modules are offered to users of Burroughs' newly announced A3 and older A8, B6000, B6000 and B7000 series of mainframes. The integrated packages operate under Release 3.5 of Burroughs' MCP operating system, announced here last week. The packages are said to cut the effort and costs associated with applications software development and maintenance.

The packages are:

- **Menu-Assisted Resource Control**, which replaces many operational commands with menu-driven commands to guide operators in making system requests. There is no charge for this package for current users of Burroughs' MCP operating system.

- **The Interactive Dataconfigurator** was designed to establish and maintain terminal networks. By using menus included in the package, users can install a data communications network by following examples given in response to terminal descriptions and details about line protocols. The package is a no-charge item.

- **The Screen Display System (SDF)** is said to simplify the creation of screen forms used in on-line transaction-based applications. A variety of forms can be created automatically by using a series of menu commands. The package is available for a

monthly charge that varies depending on the size of the user's mainframe. SDF costs between \$40 and \$300 per month, a spokesman said.

- **The Communications Management System** provides performance measurements and resource conservation for transaction-processing-oriented environments. Said to support both large and small transaction-processing environments, the package is available in two versions. An entry-level package, called **Comm Entry**, costs between \$175 and \$600 monthly depending on the system size. A more advanced **Comm package** costs between \$300 and \$1,955 per month.

- **An Advanced Data Dictionary** manages the descriptions of all the information resources available on the system, and allows users to design data bases interactively to include screen forms designed with the SDF. The package costs between \$125 and \$810 per month, the spokesman said.
- **Extended Retrieval with Graphics Output (Erpo)** is an end-user-oriented package that is said to simplify the process of forming inquiries and reports. Capable of producing graphics output as well as statistical and tabular reports, the Erpo package features menu assistance and the ability to extract mainframe information for use by Burroughs microcomputers, such as the B50. The package costs \$175 to \$475 monthly.

The packages will be available in the first quarter of 1985, Burroughs said.

Burroughs' World Headquarters is located in Detroit, Mich. 48232.

DEBUTS

(from page 1)

inc.'s 68010 microprocessor, the unit can support multiple attached processors (see story page 5).

The A3 was designed to offer a migration path to users of Burroughs' B1000 minicomputer. Users who install the A3 can migrate up to Burroughs' top-of-the-line B7000 series mainframes without making a software conversion, noted W. Michael Blumenthal, Burroughs chairman of the board and chief executive officer.

The entry-level A3 Model D and the A3 Model F are said to offer roughly 15% more performance than Burroughs' B5000, noted Fred R. Meier, Burroughs' vice-president, program management in the Systems Product Group. The dual-processor A3 Model K is said to offer roughly 1.7 times the performance of the uniprocessor models, Meier said.

The A3 is software-compatible with the Burroughs B6000, B6000 and B7000 series processors, as well as with the A9 series of mainframes.

The entry-level Model D offers from 3M to 6M bytes of main memory and has a maximum disk capacity of 750M bytes. The Model F can support from 3M to 24M bytes of main memory and can support up to 48 data communications lines. The Model K can accommodate up to 60 bytes of disk storage, Burroughs said.

The top-of-the-line Model K can support from 6M to 46M bytes of main memory and up to 96 data communications lines. The unit can sup-

port up to 60 bytes of disk storage, Burroughs said. Each model comes with up to four built-in Winchester disk drives, which offer a storage capacity ranging from 122.8M to 491.2M bytes, Burroughs said.

The A3 models support an I/O data transfer rate of 3.4M bytes/sec and can accommodate varying numbers of data link processors. The Model D can support up to eight data link processors, and the Models F and K can support up to 16, the company said.

An entry-level A3 Model D with 2M bytes of main memory, eight data communications lines, 8,000 bytes of disk storage, a streaming magnetic tape drive capable of operating at from 25 to 100 in./sec and a 560 lines/min printer costs \$136,000. Deliveries are slated to begin in late October.

A mid-range configuration consisting of an A3 Model F with 6M bytes of main memory, 16 data communications lines, 10 bytes of disk storage, a streaming tape drive capable of operating from 25 to 100 in./sec and a 1,200 line/min printer costs \$275,000. The units are set to be shipped early in the first quarter.

A top-end configuration, including a Model E with 12M bytes of main memory, 24 data communications lines, 1.5G bytes of disk storage, a group code recording tape drive and a 1,200 line/min printer costs \$450,000. Systems will be available in the first quarter, the vendor said.

More information is available from Burroughs World Headquarters, Detroit, Mich. 48232.

DOS/VSSE and CICS/VS Frustration?

BIM gets it out of your system.

BIM presents a line of proven programs that maximize your system's capabilities, saving you time, labor and expense. These programs help get the most out of your system and people.

BIM-EDIT — The editor with more than 85 significant features that ICF can't match.

BIM-POOL — Prints output in POWERVIEW spooling queues on local or remote 3270 terminal sessions. (Purchased C/P Editor Dollar Award 1982).

BIM-SPOOL — On-line to Batch Print Spooling. Prints data passed from CICS applications directly into the POWERVIEW spooling queue.

BIM-PGG — POWER Dynamic Query Performance enhancement. Eliminates 80% of the I/O to heavily used POWER queries.

BIM-CDS — Comprehensive terminal analysis and display of operational CICS system, DBS and DB.

BIM-TEST — Visual presentation, document comparison system. Creates formatted documents from free-form input.

BIM-RCOOL — Multiple terminal sessions concurrently or CRT under DOS or OS/VS.

BIM-STRAP — Button lock 3270 BITAM terminals between multiple CICS systems without special hardware or additional ports.

BIM-CVRS — CICS 3270 data compressor system. Reduces response time for remote terminals significantly. Available for OS/VS1 and MVS also.

BIM-CMD — Causes one CMT's output to be sent to another CMT's printer for problem determination and documentation.

BIM-2870 — Comprehensive CRT screen image print facility. Copy to terminal printer or spool queue for system printer.

BIM-STATUS — Online display of library directories and entries, VSAM Catalog entries, disk VTOC's, and OS/VS1 and MVS status.

BIM-CONSOLE — Multiple/Remote System Console function for CICS. Display-only or full input/output capability available.

BIM-CONSOLE — OS/VS1/VS2 Status, Performance Measurement, and POWER Queue display.

BIM-STATUS — On-line VSAM Edit and Subsystem Status.

BIM programs are cost-effective, many less than \$500. Higher \$4000 you can save even more with our group package offerings. Products are available on permanent, annual, or monthly license, and shipped on a 30-day free trial basis. Product demonstration is available on request.

BIM also performs systems programming consulting, with consultants based in Minneapolis and Washington, D.C. Computer time services are also available on our 486V system, online or remote.

BIM

81 MOORE ASSOCIATES, INC.

612-933-2885

5788 Lincoln Drive

Telex 297 805 (BIM U.S.)

Minneapolis, MN 55436

Monitor Information Computer Consultants Inc.

BURROUGHS CORP.

Characteristics	System	A3-B
Relative Performance		1
Speed		1
Memory size in bytes (Minimum-Maximum)		3M-6M
Processor (MIPS)		3,200,000 (MIPS)
Memory Size (MIPS)		3,200,000 (MIPS)
License Price		\$14,831 (\$ Year)
License Term		7.5
Operating Time (Hours)		6-30
Operating (Minimum-Maximum)		6-30
Cost (Dollar) size		80
Bus Architecture		80
Price per 1M byte of main memory		\$10,000

1. CW estimates based on vendor-supplied information. Performance ratings are based on an IBM 370/158-X equivalent.
2. CW estimate.
3. For example, 100% criticals, power supply and all peripherals.
4. Burroughs processors use data bus processors in place of conventional I/O channels. Does not include a communications subsystem.

OW 04/84

Second-class postage paid at Framingham, Mass., and additional mailing offices. Computerworld (ISSN 0010-4841) is published weekly, except January 6 issues, February 6 issues, March 5 issues, April 7 issues, May 5 issues, June 7 issues, July 8 issues, August 6 issues, September 7 issues, October 7 issues, November 6 issues, December 6 issues and a single combined issue for the last week in December and the first week in January by CW Communications, Inc., 375 Coughlin Road, Box 880, Framingham, Mass. 01701.

Copyright © 1984 by CW Communications, Inc. All rights reserved. Computerworld can be purchased on 35 mm microfilm through University Microfilms Int., Periodical Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed/abstracted by CompuServe, CompuLink, and CompuBase.

PHOTOCOPY RIGHTS: permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CW Communications, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of \$1.00 per copy of the article, plus \$1.50 per page to be paid directly to Copyright Clearance Center, 21 Congress St., Salem, Mass. 01970.

Permission to photocopy does not extend to copyrighted articles followed by this symbol: ©

Special requests should be addressed to Nancy M. Shannon, CW Communications, Inc., 375 Coughlin Road, Box 880, Framingham, Mass. 01701. ISSN 0010-4841/84 \$3.00 + \$5.00 a copy; U.S. — \$44 a year; Canada, Central & America — \$48 a year; Europe — \$165 a year; all other countries — \$245 a year (annual service). Four-week notice is required for a change of address. Allow six weeks for new subscription service to begin.

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Department, 375 Coughlin Road, Box 880, Framingham, Mass. 01701.

ABP

mtcc

Burroughs XE 550 supermicro squeezes into Unix arena

NEW YORK — Burroughs Corp. tossed its hat into the congested multi-user Unix workstation fray last week with a high-end addition to its XE line of supermicrocomputers, the XE 550.

Developed for Burroughs by Convergent Technologies, Inc., the system is the first Burroughs product to offer compatibility with AT&T's Unix operating system. The XE 550 uses an enhanced version of AT&T's Unix System V, called Centix, which Burroughs developed for the system.

Burroughs also announced a series of software programs that are collectively called Centrephere. The programs include administrative functions, word processing, spreadsheet, applications development, data base management and networking packages, the vendor said.

The XE 550 incorporates a series of Motorola, Inc. 68010 and Intel Corp. 80186 microprocessors and comes packaged in a cabinet roughly the size of a two-drawer file cabinet. The XE 550 can use up to three integrated 5¼-in. 5M-byte Winchester drives, and a disk expansion cabinet can be added to accommodate up to four extra disk drives. The external drives can have a capacity of 46.3M bytes unformatted or 37.5M bytes formatted, the vendor said.

The XE 550 is capable of distributing its work load over multiple functional processors, each of which contains its own memory. These processors include:

A 32-bit applications processor used to execute the Centix operating system commands. Each applications processor board contains a 68010 microprocessor with 512K bytes of random-access memory, expandable to 4M bytes. A memory management unit performs paging functions and

offers 3.5M bytes of virtual storage per user. The XE 550 can support multiple applications processors, the vendor said.

Other on-board processors include a file processor to control the integrated Winchester disk drives and a cluster processor that offers support for RS-422 and RS-232 communications protocols. The cluster processor also allows users to attach up to 16 Burroughs PT 1500 intelligent terminals to the XE 550 system.

Tape support is provided by a series processor that includes an Intel 80186 microprocessor and up to 768K bytes of random-access memory. The storage processor also provides memory and computing power

for Burroughs' Storage Module Device controller.

Lastly, a terminal processor is included to offload terminal I/O processing from the applications processor. The terminal processor contains an Intel 80186 microprocessor and up to 768K bytes of random-access memory, the vendor said.

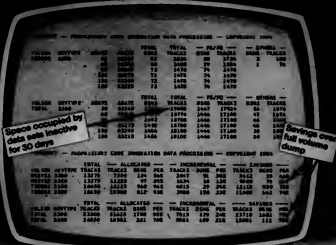
Software available with the XE 550 includes: Centreware, a word processing package; Centbase, a menu-driven administration facility; Centrecore, an interactive design and forms facility; and Centreplan, a spreadsheet program.

Programming languages supported include Basic, Cobol, C and Pascal, the vendor said.

An entry-level configuration of the XE 550, including three processors, 2.5M bytes of system memory, 1.5M bytes of application memory and 75M bytes of disk storage costs \$45,500. A mid-range configuration consisting of five processors, 4.5M bytes of system memory, 3M bytes of application memory and 112M bytes of disk storage costs \$75,750. A large configuration consisting of seven processors, 8M bytes of system memory, 4.5M bytes of application memory and 346M bytes of disk storage costs \$102,650, Burroughs said.

More information on the products is available from Burroughs World Headquarters located in Detroit, Mich. 48232.

WHAT DOES THIS REPORT MEAN TO YOU?



SR to examine a terminal case

Data processing may be facing a terminal case. Data terminals are being squeezed on the one hand by cost factors and microcomputers, on another hand by pressures for end-user computing, on still another by alternative means of data entry and manipulation. Computerworld's November Special Report will focus on data communications terminals and examine their special situation.

Contributions to the Special Report should take one of two forms: a tutorial article or an application story.

Articles must be typed, double-spaced and range in length from four to six pages. Artwork, such as charts, graphs and photographs, is welcome.

Authors should include a brief biography and a telephone number at which they can be reached. The deadline for submissions to the Special Report is Oct. 22.

If you have a story you would like to tell, send it to Janet Piferio, Special Reports Editor, Computerworld, 375 Coquitaine Road, Box 880, Framingham, Mass. 01701.

This report means that ABR puts you in control of your system whether it drives 16 or 160 disks.

WITH ABR YOU:

- Identify and free-up inactive data sets
- Save by dumping only data sets which change
- Track and recall backups automatically
- Provide the security of current backups
- Install programs in minutes with a simple Wizard

SEND FOR YOUR FREE DASD MANAGEMENT REPORT PROGRAM

(Contains tape and brief easy-to-follow guide.)

The only thing more convincing than seeing your own data processed in report forms with such ease and accuracy is the factual measurement data you can provide to those whom you would influence and persuade.

ABR provides an efficient and easy-to-use method of managing the space on direct access volumes, regardless of the size of your system. And this report will help you prove it.

ABR — The Fastest DASD Management System...

So call 208-777-2346
for fast response, or write to:



**INNOVATION
DATA PROCESSING</**

NEWS

User dispute brewing over Prime's bundling practice

By Susan McManis
CW Staff

NATICK, Mass. — Five months after users of Prime Computer, Inc. minicomputer systems hammered out a compromise with Prime over the licensing prices for its Prime operating system, users are getting fired up once again — this time over the company's bundled hardware/software maintenance package.

According to Prime spokesman Joe Gavaghan, the company bundles system maintenance with maintenance of Primos, the operating system for Prime minicomputers because it considers Primos to be an integral part of each system. Without accepting one of the company's hardware maintenance contracts, users cannot get any Primos updates, he explained.

User dissatisfaction with the bundling policy prompted the National Prime Users Group (Npug) to write Prime requesting that company officials address the issue, said Npug President Patrick Corcoran from the Montana Power Co. in Butte, Mont. The maintenance policies and dissatisfaction with Prime maintenance have prompted some Prime users to turn to third-party or in-house maintenance.

Companies that have taken this route include Geo-Search Corp., a seismic data management company based in Midland, Texas. The company has three Prime systems, including two Prime 750 superminis and an

older Prime 400 supermini that it uses to process geological information it supplies to the oil industry.

Downtime, delays

According to Mark Van Cott, manager of the computer systems division, Geo-Search, while under a Prime maintenance contract, experienced several problems, including extended periods of downtime and delayed maintenance response. Because of its remote Texas location and the resulting delays in Prime's system maintenance, Geo-Search abandoned Prime maintenance and adopted an in-house maintenance program. Today, "We have experienced virtually zero downtime," Van Cott said.

Because of its decision to drop the hardware maintenance contract, Geo-Search has been unable to acquire updates of the Primos operating system, Van Cott said. The company now runs revision 19.1 of Primos, even though Prime has released Primos revision 19.3 and users interviewed expect revision 20 to be released next year.

But the unavailability of Primos upgrades to third-party maintenance companies has left Prime users with few alternatives to Prime's maintenance. At Source Telecomputing Corp. in McLean, Va., an information utility company owned by Readers Digest Association, Inc., Director of Operations Bill Reed said his company intends to remain with Prime

maintenance for that very reason.

Asked under what conditions he would consider third-party maintenance, he said he would do so "if it were not almost impossible to put Primos on third-party maintenance and if there was a vendor that would give me the quality of service [necessary] to meet my uptime goals." Fourteen Prime 750 machines are used by Source Telecomputing, which operates an extensive network to provide users with formatted information such as financial news, electronic mail and airline guides. "The cost of maintenance and the lack of alternatives" keeps Source Telecomputing with Prime maintenance, Reed said. "Prime actually discourages third-party maintenance — most understandably, since product and marketing is one thing and sales and service is another."

But, he said, the existence of third-party maintenance companies is a reality that computer manufacturers must face up to.

Disincentive turned to profit

Some third-party maintenance companies claim to have profited from some user dissatisfaction with Prime service and maintenance. In Parker, Colo., Tristan Dynamics, Inc. President Bill Sheppard said his three-year-old company, specializing in Prime computers, has more than 300 customers on contract and has done business with about 800 users.

Among those customers is Scientific Applications International Corp., a research and development company that writes scientific applications software. At the company's Denver office, DP manager and analyst Wes Parker said his firm had dropped Prime maintenance in April 1983.

According to Parker, the reason behind the switch was the company's limited need for hardware maintenance. Parker noted maintenance costs have dropped from about \$1,700/mo with Prime maintenance to Tristan's \$800 monthly charge, which includes \$450 that Scientific Applications puts toward a company "parts pool," Parker said.

Unable to obtain updates to the Primos system ever since it dropped Prime's maintenance contract, Scientific Applications has been working with Revision 18.3 of Primos. Revision 18.3 has been "adequate" for the company, because much of the software support is done in-house, Parker said.

The only thing that could present a problem for Scientific Applications, Parker said, is if revisions of Henco Software Co.'s Info, the company's data base management system, do not run on Primos 18.3.

For Prime, the impending discussions on the bundling issue will be treated in the same fashion as the recurring issue. "As with releasing, we're saying, 'let's look at it first,'" Gavaghan said.

Scribe puts math in your documents

Why cut and paste to insert mathematical equations and symbols in your documents? The Scribe Document Production System software intermixes text, graphics, special characters, and mathematical equations in all types of printed output. Output such as manuals, proposals, textbooks, and technical publications. Scribe lets you include complex mathematical expressions that look professionally typeset. And wait till you see how easy it is.

Scribe is available for DEC, Prime, IBM, Sun, Apollo, and most UNIX systems. Your output can be printed on a spectrum of devices from letter-quality typewriters to photo-composers and laser printers.

Scribe makes producing mathematical output as easy as A. To get started contact Wayne McDaniel

UNILOGIC, Ltd.
180 North Craig Street
Pittsburgh, PA 15213
412-521-2277

UNILOGIC



Don't miss the new Scribe Document Production System software. It's the only software that lets you create professional-looking documents with mathematical expressions, graphics, and special characters. Scribe is available for DEC, Prime, IBM, Sun, Apollo, and most UNIX systems. Your output can be printed on a spectrum of devices from letter-quality typewriters to photo-composers and laser printers.

Scribe makes producing mathematical output as easy as A. To get started contact Wayne McDaniel

UNILOGIC, Ltd.
180 North Craig Street
Pittsburgh, PA 15213
412-521-2277

Don't miss the new Scribe Document Production System software. It's the only software that lets you create professional-looking documents with mathematical expressions, graphics, and special characters. Scribe is available for DEC, Prime, IBM, Sun, Apollo, and most UNIX systems. Your output can be printed on a spectrum of devices from letter-quality typewriters to photo-composers and laser printers.

Scribe makes producing mathematical output as easy as A. To get started contact Wayne McDaniel

UNILOGIC, Ltd.
180 North Craig Street
Pittsburgh, PA 15213
412-521-2277

Don't miss the new Scribe Document Production System software. It's the only software that lets you create professional-looking documents with mathematical expressions, graphics, and special characters. Scribe is available for DEC, Prime, IBM, Sun, Apollo, and most UNIX systems. Your output can be printed on a spectrum of devices from letter-quality typewriters to photo-composers and laser printers.

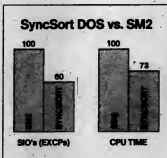
Scribe makes producing mathematical output as easy as A. To get started contact Wayne McDaniel

SMART COOKIE

Like you,
SyncSort DOS
is cut from
a special mold.

Call (201) 568-9700.

It's healthy
for your
system.



syncsort
INC.

One thing about smart cookies, they can spot each other a mile away.

While they don't flout their derring-do, they quietly know they're the best at what they do. Because substance shows through. Every time.

Especially when the going gets tough. And rough. As it often does in a DOS environment.

For example, a smart cookie doesn't crumble under the pressure of too many programs and too few programmers.

A smart cookie doesn't waste dough — but picks and chooses the right ingredient to keep production on the rise.

And sometimes, even, a smart cookie has to be a mighty tough cookie. That means being on the job constantly. Keeping things running and humming. Without draining vital resources.

All of which brings us to our smart cookie: SyncSort DOS. A cut above the rest if you ever saw one. Check these delicious advantages.

Better Performance

Pop one into your system and you'll see a mouthwatering difference. Immediately, SyncSort DOS will give you performance improvements like those shown in the chart on the left.

And performance features such as:

- **Automatic Secondary Allocation.** With this feature your sorts will never run out of disk space, i.e., no "sort capacity exceeded" messages.

Better Features to Improve Programmer Productivity

As you begin to digest SyncSort DOS, you'll find it more and more to your liking. With ingredients that cut down to size the amount of programming time going into applications.

- **SortWriter** — A powerful tool that can produce extensive reports as a by-product of your normal sorting — without user exits and the associated programmer investment. Headers, trailers, total and sub-total capabilities provide flexible formatting.
- **Record Formatting** — Powerful features like INCLUDE/OMIT, INREC/OUTREC, SUM and others — with capabilities like data conversion, editing, insertion of literals.
- **Multiple Output** — From a single sorted file, you can create multiple files and reports. Each can include the same or different data as determined by INCLUDE, OMIT, OUTFIL or OUTREC parameters.

Better Customer Service

Still another sweet advantage of SyncSort DOS: help is always there when you need it. 85% of all requests for service are resolved within 24 hours. We always rise to the occasion.

The moral to this story: smart cookies are quick to reject half-baked solutions in favor of SyncSort DOS. Call us for a demonstration. Once you get a taste you will be hungry for more.

SyncSort DOS

One smart cookie deserves another.

NEWS

IBM merger to impact Rolm cooperative agreements?

By David Cohen
CW Staff

The proposed merger between IBM and Rolm Corp. raises the question of whether some IBM competitors will continue their cooperative agreements with Rolm.

The merger poses an interesting dilemma for Westboro, Mass.-based Data General Corp. Under a joint agreement signed last year, Rolm manufactures rugged versions of DG's Eclipse MV superminicomputers to sell to the U.S. military. The two firms have a second agreement in which DG markets Rolm's Ada software with its Eclipse machines.

Spokesmen for DG and Rolm said they have no immediate plans to cancel the agreements because of the merger. "We haven't had a chance to come to a formal decision," DG

spokesman Ken Donoghue said. "We'd like to continue as best we can with these agreements, but it's too early to tell."

Donoghue added that although the revenues derived from the agreements are not overly significant, DG considers its foothold in the military market very important.

Some observers questioned, however, whether either company — DG or IBM — will want to be involved in marketing a competitor's systems.

"Does IBM want to be selling [DG] computers?" questioned Anthony Langham, industry analyst and vice-president with Prudential Bache Securities. "I'm not sure that's logical."

Other computer companies such as Digital Equipment Corp., Hewlett-Packard Co. and Wang Laboratories, Inc. have agreements with Rolm to

ensure compatibility of their system lines with the Rolm CBX, a private-branch exchange (PBX).

Kenneth Rowe, a Rolm spokesman in Santa Clara, Calif., said his company's position is that the IBM deal will not affect the joint agreements because IBM would not be privy to the arrangements between Rolm and those companies.

He said that when IBM first purchased a 16% stake in Rolm last year, the companies were given assurances that IBM would not be privy to the arrangements between Rolm and those companies.

"There's nothing in our agreement with IBM that would force us to abrogate our agreements with other companies," he said.

As a PBX vendor, Rowe noted, "We have to be compatible with a lot of different companies' equipment,

otherwise, we're no good to our customers."

Dick Harmon, a spokesman for HP in Palo Alto, Calif., said the company sees nothing in the IBM acquisition to alter its February 1983 agreement providing compatibility between HP 3000 small business computers and Rolm CBXs.

"There's no change in the agreement with Rolm because it has nothing to do with the competition," he said. "We're not buying anything from them, and they're not buying anything from us."

A spokesman for Wang in Lowell, Mass., said the company "has no reason to believe anything will change" in its agreement with Rolm.

IBM announced last month that it will pay \$1.35 billion in convertible debentures to acquire Rolm.

SOFTWARE from page 1

lishes a newsletter read by some 800 users of those machines, expects to have sold well over 1,000 packages by year's end.

Britz Publishing boasts another achievement that most microcomputer software vendors would find difficult to match. The company has sold every one of those 1,800 packages for only \$99 apiece.

And while the \$99 price tag may be an eye-catcher, the software is no gimmick. Users told *Computerworld*

that Britz Publishing's high-quality software packages have repaid their purchase price many times over.

If you find that hard to believe, you are not alone. George Britz, vice-president and treasurer of Britz Publishing, said that most of the company's customers were also doubting Thomases — at least until they used the software.

"Some people find our software unbelievable," Britz said. "They can't believe they can get something good for \$99. But we now have a number of Fortune 500 companies

that have bought five or more packages. They buy one, questioning our credibility, but they quickly find that the packages are good quality, productive, useful software. Then they begin to explore further what we have to offer. They find they really cannot go wrong."

Britz Publishing now markets five scheduling and applications packages for the System/32, 34, 36 and 38 that were developed by Leon Stewart, Britz's president, on the service bureau's System/34.

Britz's offerings include Indoc, an indicator documentation program;

the Days scheduling package; the Sword word processing system; Email mailing list management software; and the Accounts Receivable Transactions (ART) package. Britz Publishing has also compiled a package of public domain programs for the IBM minis that it supplies to users for \$10.

For \$99, a customer receives the software, the source and object code, documentation and any future enhancements. How can Britz Publishing provide all this for such a low price?

"One reason is our low overhead," Britz said. "We already had a service bureau, and we just tacked this company on in a separate room. We had the development resources available. Also, we market our products strictly by direct mail."

"We have a mailing list of more than 47,000 valid shops, from the System/32 to the System/38, to which we mail every quarter. What's more, we do not maintain any inventory. When we get a number of orders, we copy the software, print up the documentation, package it and ship it out."

What do Britz Publishing's clients think of the company's software? "I have no qualms about saying that the software is good quality, useful software that does exactly what the company said it would. I would most certainly buy another package from Britz if it met our needs," said James

Pedely, controller for the Carroll, low-based Pepsi-Cola Bottling Co.

A self-trained programmer, Pedely initially purchased the Indoc package to aid him in maintaining and developing applications software on the company's System/34. "Because of my background," he said, "I do unorthodox things. I didn't have time to produce documentation every time I wanted to make a change. So I included a run of Indoc as part of the compile process. It takes a few extra minutes, but it gives me documentation and an outline of how all the program indications

are being used. For the money, I am a real believer."

While the \$99 price tag was one of the main reasons Pedely purchased Indoc, it was his satisfaction with the package that prompted him to purchase the Days scheduling software. "We actually have four separate companies for which we do processing," he said. "It was getting

difficult for us to keep track of all the tasks we had to perform on a monthly or weekly basis. Days has given us a continuing challenge. Although we haven't had a lot of experience with it yet, it is easy to use and works just as well as I had expected."

Pedely's sentiments were echoed by Gary Pittich, assistant vice-president for the Bank of Boston International Management Services Department.

"Based on our use of Indoc on our System/34," he said, "we would definitely buy another of Britz Publishing's packages. Its software is as reliable as any other software we have."

"Personally, I feel that automation can get just too sophisticated," Britz said. "The end user who is trying to be productive and practical can get lost in all that sophistication."

"People initially laughed at these \$99 programs, but they soon learn that we are providing effective, productive tools that can be used immediately."

NEW Release 2 with Sorting - Consolidation - Color Graphics - External File Interface

ESS

Electronic Spread Sheet
For VM/CMS & MVS/TSO
The Best Mainframe Spreadsheet

Powerful - Spreadsheet size is limited only by available virtual storage. ESS easily handles spreadsheets with thousands of rows and/or columns.

Proven - Thousands of satisfied users worldwide at large end small installations, including many Fortune 500 corporations.

Compatible - ESS accepts the same commands as VisiCorp's VisiCalc® program for microcomputers. A person familiar with VisiCalc® can be using ESS productively in minutes. In addition, ESS can load and save files in VisiCalc® format.

High Performance - Assembler language code and sophisticated storage management techniques give you fast response, even with very large spreadsheets.

Easy to Install - Just load the ESS program. No additional program products or languages are required.

Cost Effective - ESS gives all your users access to personal computing capabilities for just \$220 per month. Compare that to the cost of buying hundreds of microcomputers.

Questions? - For more information about ESS, or to arrange a 30-day free trial, call or write TRAX.

TRAX

TRAX Software Inc.
19801 National Blvd.
Los Angeles, CA 90064
(818) 675-TRAX

Wang steers multitasking desktop toward secretaries

LOWELL, Mass. — Wang Laboratories, Inc. last week launched what its company officials described as its long-awaited final attack in the war on the office typewriter.

Wang's new \$2,395 Office Assistant is "the first low-cost, multitasking computer designed specifically for the secretarial marketplace," the company said.

System hardware includes 256K bytes of random-access memory, an Intel Corp. 80186 processor, one 5¼-in., 360K-byte floppy disk drive, a 12-in. monochrome monitor and keyboard. The proprietary multitasking operating system is bundled with word processing, typewriter emulation and forms management applications software.

The new desktop system, which looks much like Wang's Professional Computer and features much of the same hardware, struck many personal computer dealers as a low-end personal computer during its preview, according to Carmen Reitano, director of dealer marketing. But Reitano and other Wang executives insisted that the Assistant should not be viewed that way.

"The personal computer was designed exclusively for managers," Reitano said. He agreed that secretaries do use personal computers but called that setup "an unnecessary extravagance."

The Assistant "doesn't cost nearly as much as a low-end personal computer," maintained John Thibault, director of office systems marketing. He also emphasized that the Assistant is "a complete stand-alone office system," offering secretaries features engineered from the ground up.

Multitasking feature

Among those features, multitasking permits three tasks to run concurrently,

with two-keystroke switching between tasks. This allows secretaries to work on several jobs at once, as they do normally, Wang executives said. "A secretary usually doing one complete task before going on to the next," said Robert Doretti, senior vice-president for U.S. operations.

The Assistant's word processing package is a subset of Wang's WP Plus, said to offer a menu-driven user interface, multiple word-wrap columns, automatic pagination, text highlighting and spell-screen editing. The typewriter mode handles small jobs such as envelope and label data printing, Wang said. The forms mode reportedly automates the process of

filling in, editing and printing data on preprinted forms.

Optional software includes Microsoft Corp.'s Multiplan (5195); Software Publishing, Inc.'s PFS:File and PFS:Report (5355 for both); Graphic Communications, Inc.'s Graphwriter (5395) and two tutorial packages (560). Other third-party applications could be ported to the Assistant fairly easily, but "a secretary doesn't need [Ashton-Tate's] Dbase II or every other off-the-shelf application known to man," Thibault said.

Four Assistants can share a Wang printer through a \$495 sharing device. Wang is offering a package combining an Assistant with either a 30 or 55 char./sec daisywheel printer,

for \$3,295 or \$5,095, respectively. An optional second floppy disk drive is priced at \$400.

Teletype Corp. terminal emulation costs \$150, while software allowing the Assistant to act as a Wang VS workstation carries a \$250 price tag, according to the vendor.

Currently, Assistants can read files only from other Assistants, but in the first quarter of 1985 the system will be able to send and receive documents from other machines via Wang System Networking, according to product manager Richard Turner.

Additional information is available from Wang, which is located at One Industrial Ave., Lowell, Mass. 01861.



- BDS/Dataproducts Ping-Compatible Printers
- Built for Handling Continuous High-Volume Output

IBM-DEC-BURDOUGHS

- Since 1975, the Largest Independent Supplier of Ping-Compatible Printer Systems
- Over 5,000 Systems Installed
- Complete Line of High Quality Dot Wheel, Matrix and Band Printers, 55 CPS to 2000 LPM
- 30-50% Savings
- Quick Delivery (30 Days or Less)
- Reliability Built-In (BDS Controllers and Interfaces)
- Low Maintenance Cost
- TRW Nationwide Service
- Price Includes Installation and 90 Days Parts and Labor Warranty

For more information on information on ping-compatible printers

- ☐ 30-300 CPS Matrix Printer
- ☐ 30 CPS Dot Wheel Printer
- ☐ 300-2000 LPM Band Printers

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone (____) _____

1-800-944-2115

IBM Corporation
800 North Ave.
Mountain View, CA 94039

U.S. (714) 724-0000. Outside U.S. (415) 944-0000

IBM announces 22% profit hike in third quarter

ARMONK, N.Y. — On the strength of continued healthy demand for its high-end processors, IBM reported last week that its profits rose nearly 22% in the most recent quarter.

Profits for the third quarter ended Sept. 30 were \$1.55 billion, or \$2.60 a share, compared with \$1.3 billion, or \$2.14 a share, for the year-earlier period.

Revenues rose 13% to \$10.65 billion from \$9.4 billion for the previous year.

John R. Opel, IBM chairman, said deliveries of the company's 3090 series mainframes, 3380 disk storage devices and Personal Computer products were particularly strong.

Opel noted that quarter-to-quarter comparisons continue to be influenced by the strength of the U.S. dollar relative to foreign currencies. For the nine months ended Sept. 30, revenues rose 15% to \$31.44 billion from \$27.28 billion from the previous year. Profits during that period increased nearly 22% to \$4.41 billion from \$3.62 billion.

NEWS

Baseball teams eyeing software developer's pitch

By John Deane
CW Staff

CONSHOHOCKEN, Pa. — How did the four major league baseball play-off contenders take advantage of computer-aided baseball analysis? Answer: Not at all.

Which proves that computer analysis of baseball is still not needed to produce World Series contenders such as the San Diego Padres and the Detroit Tigers. But some proponents of computer-aided baseball analysis are out to change that, and one of them is Stephen Mann, president of the Baseball Analysis Co. here.

Mann claims to be the first baseball analyst ever employed by a major league baseball team, the Houston

Astros in 1979. Traditional baseball statistics such as runs, hits, errors and strikeouts have been kept by clubs for many years, mainly for feeding to reporters and other publicity outlets. Baseball analysis involves the use of such statistics, plus information on every pitch and every batted ball, to try to improve a team competitively. "My role is to try to take advantage of the statistics to help the club," he said.

At the request of the Atlanta Braves, Mann and baseball analyst and computer programmer Peter Palmer developed a baseball analysis software program. The Braves and the Philadelphia Phillies have been using the software, dubbed Baseball,

for one season. The Chicago White Sox, New York Yankees and Oakland Athletics use a program called Edge 1.000 from Pacific Select Corp.

The Baseball system breaks down data on balls, strikes, pitches, hit-ball trajectories and fielding into precise categories. The area around and including the strike zone is divided into 30 sectors, and the field is divided into 140 sectors. The data is collected by one or two observers, who note every detail of every pitch and the nuances of every play using a numeric code.

Once data is entered into the system, the software can yield such data as how many balls one shortstop can get compared to another shortstop,

how many curveballs as opposed to fastballs a pitcher throws for strikes and better's tendencies. "This will shed light on an area virtually nobody knows about yet," said Mann of his system. "It will yield a lot of discoveries that will really have an impact on the game."

The program was written on a system running a Digital Research, Inc.'s CP/M operating system and will run on systems executing the following programs: Microsoft Corp.'s Basic, Ashton-Tate's dBase II and Micropro International Corp.'s Wordstar, Mann said. It can be supported by a micro or a mini, he added.

CRT terminals in the dugout, for instant information on the best person to pinch hit, pitcher tendencies and so on, are a long way off. "Right now, it's the front office people who are buying into this system," and not the on-the-field people, Mann said.

One front office person who has considered Mann's system is Bill Lajoie, general manager of the Detroit Tigers. Because the Tigers are in the process of moving from a time-shared system to their own computer system, Lajoie told *Computerworld* last week, he has no equipment now to run Mann's system. While, in his opinion, the system has merit, Lajoie says "The human element is the most important thing in baseball: how players are feeling and reacting on the day of the game. I'm not as excited about the system as some people. Baseball is a science, but it's not an exact science," Lajoie said.

Lajoie added, "When players feel right, have the proper attitude and want to win, a lot of times you can throw the statistics out the window." The impact of computers on baseball is also being felt in the Office of the Commissioner of Baseball in New York, which had its first computer — an IBM System/38 — delivered in April.

According to the office's first director of data processing, Wilfredo Feliberty, the System/38's potential is just beginning to be tapped. The office has big plans for the system.

'Control data base'

"Ninety percent of what's going into the System/38 is statistical baseball data," Feliberty said. "It is not mainly for financial applications like accounts payable and receivable. It will be a central data base for baseball information. We hope to have everything related to statistics."

By the beginning of next season, Feliberty said, the commissioner's office hopes to have an IBM Personal Computer or compatible in the office of every major league team. Seven private lines in the commissioner's office will be dedicated to answering team inquiries. Just which micro or system will be supported and who will pay for the systems has not yet been decided, Feliberty said.

Major league front offices seem to be won over by IBM. The New York Mets, San Francisco Giants and Kansas City Royals all use a System/34; the Seattle Mariners use a System/36; and the Los Angeles Dodgers have two System/38s, Feliberty said.

Will the System/38 change baseball? "When you really start thinking of all the things that can be done with computers in baseball, there's no end to it," Feliberty said.

TAKE A MOMENT TO SIZE UP OUR COMPETITION.



Now that we've introduced the new AGILE 6287 Printer/Plotter Protocol Converter, there's one thing we can say about our competition...

... they're a very nervous flock. And for good reason. The overall quality of design and engineering is evident throughout the 6287. From its upgradability and optional APL, through its built-in diagnostics, internal power supply and fan, the 6287 assures you of consistent high performance. A performance that is backed by a full two-year warranty. Whether it's high speed printers, plotters, dot matrix, daisy wheel or even laser printers, the AGILE 6287 is the controller you can count on.

As for our competition, we'd count on them only when we had trouble sleeping.

AGILE

4041 Pike Lane, Concord, California 94520
(415) 625-6220 Outside California (800) 538-1634

IBM 3274/76
PRINTER/PLOTTER
PROTOCOL
CONVERTER

The solution is complete for Public Service of Indiana.

Online

Public Service of Indiana
1000 East Main Street
Plainfield, Indiana 46161

IDMS/R	1/22-2/21/84
IDB	1/25/84
GOLDENGATE	1/25/84

IDMS/R, the Information Database, and GOLDENGATE
will be the heart of our information center.

Date

1/31/84

John Kidman
Signature

NEWS

Users blame line maintenance woes on divestiture



CW AT CMA

By John Ritz
CW Staff

UNIONDALE, N.Y. — Order backlog for private lines are still a thorn in the side of communications managers, but servicing existing lines is proving to be just as nettlesome. Communications managers attending the recent eighth annual Communications Managers Association (CMA) meeting here reported a varying degree of leased-line service problems. All agreed, however, that even the

simplest line problem can potentially mushroom into a major headache.

Private lines within one state and within one Local-Access Transport Area (LATA) are the least problematic to maintain, managers reported, because they are generally provided by a single company.

LATAs are the artificial boundaries established with AT&T's divestiture to distinguish between local and long-distance traffic. The former Bell operating companies only offer services within LATAs, and inter-LATA traffic is reserved for long-haul carriers.

Of all private-line circuits, maintaining inter-LATA facilities requires the most effort, managers agreed.

Trouble calls for these lines must often be reported to both the inter-LATA carrier and the local-loop or intra-LATA carrier.

Further complications

The situation is further complicated for circuits that cross not only LATA boundaries, but also cross into the jurisdiction of another divested Bell operating company or independent telephone company. In this scenario, a problem may have to be reported to the local divested Bell operating company, the long-distance carrier and the divested Bell operating company where the line is terminated.

AT&T's divestiture has even com-

plicated reporting problems. Where once a circuit that involved a long-distance carrier and two local Bell operating companies had a single identification number, it will now have three.

Nightmares created by this situation include a tale told by a communications manager for a New York utility company who did not wish to be identified. She said her company lost an inter-LATA circuit and reported it to the carrier, AT&T Communications. That company said it did not have a record of the circuit, so the service call was referred to the individual local telephone companies that handled the line at both ends. Both of those companies said they could not deal with the problem because it was an inter-LATA line. As it turned out, AT&T Communications had seemingly deleted two elements of the circuit identification arbitrarily, without notifying the customer.

The problem in this case was simple lack of communication, but it is indicative of the things that can go wrong now that there is no universal circuit numbering plan.

Another element mentioned repeatedly by conference attendees was finger pointing, where each carrier involved in a downed circuit insists the problem is the other carrier's. Finger pointing forces the communications manager to do his own problem isolation, said George E. Hallenbeck, manager of communications system technology with Emery Distribution Systems, Inc.

Ben J. Bonetti, communications manager at Michelin Tire Corp., said finger pointing is a way of life when dealing with multiple carriers.

In a speech before the CMA, Donald Procknow, vice-chairman of AT&T Technolgies, acknowledged the problems CMA members face. He said they "reflect the loss of close working relationships between AT&T Communications and the [divested] Bell operating companies."

Fourth-Generation Languages

- Defined
- Evaluated
- Explained
- Reviewed

NEW

The JAMES MARTIN REPORT on HIGH-PRODUCTIVITY LANGUAGES

With over 500

pages of valuable data, The Martin

Report eliminates the confusion in the selection

of high-productivity tools. It provides clear guidelines and advice from the world's

leading DP consultants on how to utilize the new technology successfully.

A major benefit of The Martin Report is in-depth product reviews of the most significant tools. These reviews are 30-40 pages long and include user experience.

The Martin Report also categorizes products and methodologies, relates product categories to specific installation needs and provides practical advice on the selection and use of the best tools.

10x Productivity Gains Available Today

Never before have the techniques of application development changed so dramatically. New fourth-generation languages offer major productivity gains and equally significant dangers.

Pick the right products and apply them properly, you become an instant hero in your organization. A wrong decision can lead to disaster.

Made no mistake. The James Martin Report on High-Productivity Languages is designed to make you a hero. It is written to guide you and your organization on a step-by-step path to success.

With The Martin Report in your hands, you have a continually updated reference document to provide both top management and end users in your organization with the guidelines they need to make the right decisions. Remember, technology advances always have a potential for gain or loss. The difference between the two is frequently the knowledge and wisdom of the data processing professionals within an organization.

The annual subscription price of \$295 for this new information service includes the initial report (over 500 pages) and three quarterly updates. Order your copy today.

15 Day Free Trial

- ☐ Yes, Please send me The James Martin Report on High-Productivity Languages. I understand that I may return the report within 15 days and one mailing if it does not meet my expectations. Otherwise I agree to pay \$295 plus \$17 shipping and handling for the report and three updates.

- ☐ Payment enclosed. (Pay now and save the \$17 shipping and handling charge. You'll receive a prompt refund if you return it.)

- ☐ Bill my company. ☐ Bill me.

- ☐ Purchase order only. (Please cite this coupon to your purchase order to ensure prompt delivery.)

Name _____
Position _____
Organization _____
Address _____
City _____ State _____ Zip _____
Telephone _____
Mail to:

The James Martin Report, Technology Insight, Inc., c/o Promotional Distribution Services, 310 New 100 Road, Westford, MA 02150, (617) 659-1000.

AT&T decreases private line wait

WASHINGTON, D.C. — AT&T reported further progress early this month in reducing its backlog of private-line orders.

Past-due orders dropped from 40,000 in August to 31,000 in September, AT&T Vice-President D.J. Calkin reported to the Federal Communications Commission. Meanwhile, the company completed half of its pending private-line orders on time in September — within 48 days after receipt of the order from a customer — as opposed to completing a third of the orders in August.

Calkin also told the commission that after Nov. 1, AT&T's Midwest region will be able to complete virtually all of its service orders within the 48-day interval.

The private-line backlog began increasing shortly after AT&T's divestiture. The number of past-due orders reached a record level, but has been dropping. The percentage of orders completed on time has increased from April's low point of 20%.

The solution is complete for Comerica.

2005/1
198
2005

March 21, 1984

James E. [Signature]

NEWS

DEC unveils products to link DEC systems to IBM SNA



at AUTONUM '84

By Bryan Williams
CW Washington Bureau

DALLAS — Digital Equipment Corp. last week introduced a family of hardware and software products at the Intech '84 conference here, intended to permit DEC systems users easy connection to IBM's System Network Architecture (SNA) environment.

DEC introduced three products to interconnect DEC systems users into the traditional proprietary communi-

cations SNA protocols of the IBM product line. The products reportedly bridge the vast protocol differences that exist between the products of the two computer manufacturers. The new releases are:

- A Distributed Host Command Facility (DHCF) that connects to IBM's own host command facility in the SNA system. The facility is said to permit IBM's family of 3270 terminals to access DEC's VAX computer system. The DHCF works through DEC's currently available Decnet/SNA gateway (DDP-11/24), a hardware/software cluster controller that will be placed between the SNA command facility and the Decnet controller. The Decnet system operates

as though it were another peripheral in the SNA system, according to the vendor.

- Users with IBM 3270 terminals operating in the SNA environment will reportedly be able to access a DEC VAX system and run command and control functions in the traditional VAX VMS operating mode. Conversely, DEC terminals can access the IBM host in the SNA system.

- Operating routines for the DEC Microvax VMS operating system, such as remote job entry, IBM 3270 terminal emulation, application program interface and gateway network management. These functions are said to enable users to incorporate the lower cost Microvax connection

to the SNA environment.

- A software command exchange facility for IBM's Distributed Office Support System (Dioses), which also provides bidirectional participation between the IBM and DEC environments, according to DEC.

DEC called the Dioses Link "the first implementation of a direct interface to Dioses" that will enable users on a DEC system to access the final form of a document before distribution and to perform other typical library services that can be provided by an IBM 370 host supporting Dioses.

- A VMS printer emulator that gives users the opportunity to print information from an IBM mainframe on a high-speed printer connected to a VAX system. The printer emulator reportedly can also be configured with a Microvax. DEC said that the emulator will permit users to transfer files for printing through a Decnet-based printer without having to use a remote batch subsystem such as JES3 or JES3 on the IBM host.

Observers attending the Intech '84 conference uniformly agreed the introductions were of major significance. Marketing representatives of other manufacturers such as Data General Corp. and Wang Laboratories, Inc., also present at the show, said they are moving quickly to develop their own connection ports for their hardware lines in the prevalent IBM SNA processing environment.

Ready market anticipated

DEC's announced pricing for the new products indicate that they anticipate a ready market. The DHCF is priced at \$1,500, and prices range from \$10 to \$400 for the Microvax routines. The Dioses distributed document exchange facility is priced at \$1,500 with a Microvax version priced at \$750.

The VMS printer emulator costs \$1,000 and the Microvax version is \$200, DEC said. All products will be available this fall, DEC added.

Henry Ancona, product group manager of DEC's Office and Information Systems said the market for the DEC-IBM links announced last week was promising, because there are currently 10,000 DEC minicomputers now connected to IBM mainframes through the DDP-11/24 DEC/SNA gateway. In 1983 alone, Ancona said, DEC sold 1,300 of the units.

William Thomas, DEC director of network and communications development for the Office Information Systems said that the predominance of IBM's SNA environment and the absence of readily available IBM-sanctioned communications links to it had prompted DEC to develop its own.

Thomas told the Intech audience, "DEC and others are providing the upper layers of the connection into an IBM environment."

Frank Pinto, director of marketing for DO's Information Systems division, called the DEC announcements "a major new addition" that goes beyond currently available "lower end" communications links of non-IBM manufacturers to IBM products. Pinto predicted that "more products like DEC's will be coming to the market soon."

DEC is located at 146 Main St., Maynard, Mass. 01754.

SIR/DBMS... for data rich, information poor, R&D

SIR/DBMS helps market research analysts, statisticians, quality assurance engineers, medical researchers, and other knowledge workers transform R&D data into strategic information. SIR/DBMS is a complete relational database management system with special features to manage empirical and decision-oriented data. And it provides unmatched portability across a wide range of mainframes, minis, and 32-bit UNIX-based microcomputers.

SPECIAL FEATURES

- Easy ad hoc query and reporting with SQL+
- Comprehensive data integrity and quality control
- Relational, hierarchical, or network views of data
- Direct interface to BMDP, SAS, SPSS
- Flexible report generation
- Publication-quality tabular displays
- Fast, efficient programming with a 4th generation language

UNMATCHED PORTABILITY

APOLLO	AEGIS
CDC CYBER	NOS, NOS/BE
CRAY	COS/CTSS
DATA GENERAL	ACOS/VIS
DEC VAX	VMS, UNIX
DEC 30/20	TOPS
DECSEL	5/32
HP 9000	HP-UX
HONEYWELL	CP-6, GCOS-6
IBM & PCMS	MULTICS
ICL	OS/V5, VM/CMS
PERKIN-ELMER	VME, VME/6
PRIME	EMAS
SIEMENS	OS/32
SPIERRY 1100	PRIMOS
SPIERRY 90	RS/360
	EXEC
	V5/V9

SIR, Inc.

SIR, Inc. has pioneered the development of database software for INFORMATION ANALYSTS in applied R&D since 1976. SIR/DBMS has been used to develop thousands of applications at R&D divisions of Fortune 500 companies, research institutions, government agencies, and universities across 25 countries. A full range of technical support and training services is available to you.

Call or write:
Director of Sales, SIR, Inc.
420 Davis Street, Evanston, IL 60201
312-475-2314

SIR/DBMS

THE choice of the knowledge worker



The solution is complete for C.U.N.Y.

NEW YORK

1988/2	1/22 - 1/23
1989	1/23 - 1/24
1990	1/24 - 1/25

The City University of New York, through its Graduate School of Management, has been the primary sponsor of a policy of developing student management systems for the Federal Government. The program has resulted in the establishment of a fully integrated management system for the Federal Government, which the full Government has adopted. After having made the University known to the Federal Government, the University has superiorly over the Federal Government, and the Federal Government has out application for the University's management system, especially as it regards

1

1/31/87

Bruce Panda

NEWS

Micro-CPU links ushering in 'police' function for minis



By Bryan Williams
CW Washington Bureau

DALLAS — The need to connect the growing number of microcomputers to mainframe data bases will usher in a new function for minicomputers that will serve as policemen in controlling the flow of data between micros and mainframes.

So claimed several industry observers who spoke at last week's In-Tech '84 conference here.

As the need to access corporate data bases by an increasing number of micro users grows, on-line micro-mainframe applications software

will prove to be inadequate for performing the job, said George Colony, president of Forester Research, Inc. in Cambridge, Mass.

"There is going to be an evolution away from the direct on-line, micro-mainframe connection to a corporate resource controller between them," Colony said.

The research firm is not alone in its views if representatives of major U.S. computer manufacturers attending the conference, which was geared toward upper-level DP managers, are an indication of future direction.

Product marketing representatives from Data General Corp., Digital Equipment Corp., Wang Laboratories, Inc. and DataPoint Corp. — all minicomputer vendors — generally agreed that the marketplace is demanding some type of controller to

police the links between local-area networks, between micros and shared peripherals and between micros and mainframes.

Colony dubbed the device a "distributed resources controller," a machine that would have control over the micro's access to the corporate mainframe data base. Queries for information originating at the micro level would first go to the controller to determine whether the information resides within the controller's system.

The researcher described the type of processing power contained within his concept of the controller as being similar to the IBM System/30 unit, or the DEC VAX class processor. Whichever manufacturer is chosen, "close architectural compatibility is implied to exist between the micros

and the controller and between the controller and the mainframe," Colony said.

"Within five years, 80% of all computer program applications will be running at the [micro] level," he added.

"Minicomputers will be well positioned to deliver this higher level of office automation."

James Dickie, chief of research and development at Informatica General Corp., called the movement to install departmental processors to assist the micros in their workplace a "big trend." Dickie said one of the main arguments in favor of the departmental processor is that it will free up the corporate mainframe and "support ad hoc requests made by micro users so they can have [the access they need]."

Net to link university mainframe with students' dorms

BURLINGTON, Vt. — Administrators who were educated in an era of keypunch machines and slide rules are now implementing a communications system designed to help students access university mainframes without leaving their rooms.

The University of Vermont here is replacing its 3,000-line Centrix system with a Raim Corp. CBK II-based integrated voice and data communications network serving 7,000 users.

The prime reasons for the change were cost control and voice/data integration. But another justification for the system, which university officials report is comparable to those used at several other schools, is that it gives students access to the school's Digital Equipment Corp. and Harris Corp. computers when they plug their personal computers into RS-232 ports on their dormitory room telephones.

"We needed integrated voice and data — the opportunity to control at least part of our communications costs. We obviously don't have that now. Half of the equipment we have on campus is becoming deregulated,

and AT&T is going to be able to charge whatever they want for it," reported Arthur W. Brautigam, university communications manager.

The system, which will be installed in phases between March and November 1985, has changed in scope since the first request for proposals was issued two years ago. Those changes were a result of the realization of our increased data needs," Brautigam said.

Staff members and students consistently have demanded greater data communication capabilities, and the university hoped to answer these demands by adding a data communications module with an RS-232 port to the Raim electronic telephone.

"We're going to start out with modules on about 15% of the phones in the system, but we're not sure what the upward boundary is for that number. You just can't know when you start talking about the number of students who will want or have to have personal computers," Brautigam said.

The 4,000 dormitory residents do not have phones in their rooms with

the current Centrix system.

With the new system, however, there will be one phone in each of the single-, double- and triple-occupancy rooms, and students will be able to order a data module for an as yet undecided fee.

The \$9 million system also will help the university to track calling volumes and control costs through

calling restriction features.

But security hazards are still under study, according to Brautigam.

"There are lots of [hazards]. One is finding a way to restrict access to the administrative data base (residing on an IBM 4341). It might mean restricting telecommunications service in addition to the built-in safeguards of the administrative system," he said.

OUR SWITCHES MAKE YOUR IBM SYSTEMS WORK LIKE A TEAM!



If you have more than one IBM or plug compatible processor, Digital can help you get the most for your hardware investment. Our switches allow you to achieve backup and peripheral configuration flexibility at a fraction of the cost you're probably paying.

Whether you have two processors or more, Digital has a switch to suit your requirements.

- Model #101 The lowest priced matrix switch on the market.
- Model #421 The only manually operated channel switch in the industry.
- Model #403 A remote controlled channel switch designed for underfloor installation.

For more information call toll-free 1 800 431-6285

DIGITAL CONTROLS

2779 Orchard Run Road • Dayton, Ohio 45405 U.S.A. • (513) 435-5455

Dallas 214-689-0089 New York 201-585-5616

Atlanta 404-284-0092

Registered Trademark

•370 CMS• RUNS IN SUPER MINI

Personal Mainframe Systems introduces the Common Business 370 Supermini Mainframe family. A new innovation in running IBM 370 application programs. Combining mainframe class power with the functionality of a personal environment. At an affordable price.

- Mainframe performance in a microcomputer size
- IBM-VSE/CMS compatible software architecture
- High performance graphics
- Single or multi-session configurations
- Entry level pricing and low maintenance costs

Personal Mainframe Systems also offers consulting and programming services to fit your individual needs. Or, you can purchase popular mainframe software packages such as: FOCUS, RAME, SYSTEM 2000, ADAMAS and more.

Yes, I want to know more about how Personal Mainframe Systems can help me.

I am interested in:
☐ Common Personal Mainframe
☐ Software Packages ☐ Consulting
☐ Specialized programming

Name _____

Title _____

Company _____

Street _____

City _____

State _____

Zip _____

Phone _____



Personal Mainframe Systems
P.O. Box 17401
Minneapolis, MN 55417
(612) 744-1741

The solution is complete for Metropolitan.

METROPOLITAN LIFE ASSURANCE
COMPANY

One Madison Avenue
New York, New York 10017

IDMS/R

IDB

GOLDENGATE

3/13/84

3/13/84

METROPOLITAN is very interested in the capabilities offered by IDMS/R, IDB and GOLDENGATE. A definite need for such capabilities exists now and will increase in the future.

3/20/84

Date

Barry D. Smith

NEWS

How does your firm put computer power on desktops?

A man-on-the-street interview at the SIM conference by CW staff writer Ed Warner



CW AT IBM

By Edward Warner
CW Staff

Chicago — It is the terminal over the personal computer by a good margin in an impromptu poll of attendees at the Society for Information Management (SIM) conference here. In response to the question "What means does your firm favor to put computing power on desktop?", most said terminals, for reasons that follow.



Robert Roth, director of information services, information systems department, General American Transportation Corp., Chicago:

General American is using "a combination of both, weighted towards terminals. We're a centralized operation, and we believe that support is best provided by a terminal system."

General American has about 100 terminals and 20 personal computers in use, he said.



Richard McGowan, vice-president, information services, M&M Corp., Raleigh, N.C.:

"We're mixed. We're using terminals wherever it makes sense, [and]

we're using personal computers throughout our companies for either stand-alone applications in a department or direct sales aids in the field. We see two distinct purposes [for each]. Right now, we support an equal amount of personal computers and terminals."



Steve S. Pichard, managing consultant, Northwest Industries, Inc., Chicago:

"We're terminal-based. It reflects the fact that we have some great tools that are available for the mainframe. When we made the choice, personal computers weren't a viable alternative, though I think we're going to have something that has both eventually." She said 126 terminals and 20 personal computers are in use by her firm.



Peter Mather, vice-president, management information services, Air Products, Inc., Allentown, Pa.:

"We're going toward intelligent terminals. Right now, we're more terminal-based, but we see that as part of the evolution" from dumb terminals to intelligent ones. Air Products has 800 dumb terminals in use and about 400 personal computers, he said.



Carl Chanson, vice-president and director of MIS, Doyle Dane Bernbach, Inc., New York:

"We're more terminal-based, but we're using the personal computer as a multifunctional device. It's hardwired to our mainframe, and it's [running as a] stand-alone. We use it as a terminal to outside data sources." His firm, a large advertising agency, has 150 to 200 terminals and about 70 personal computers in use, he noted.



Patrick F. Branstetter, director, corporate information systems, Medtronic, Inc., Minneapolis:

"I've favor[ed] personal computers over terminals. As costs of personal computers come down, we'll be implementing more of them. It's strictly a cost judgment." Medtronic uses about 350 personal computers and 500 terminals, he added.



Daniel J. Cerny, vice-president, management information services, Arvey Corp., Chicago:

"Ours is more terminal-based, with distributed systems, [though] we use personal computers for stand-alone applications that may be unique to the particular division." Arvey, he said, has six divisions and is in the process of switching from a paper-based system to a system of minicomputers.

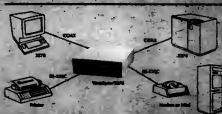
IBM 3278 to ASYNC



Versalynx/3278 from Local Data
Connects your IBM 3278 CXT to nearly all the world.

The Versalynx/3278 protocol converter provides IBM 3278 CXT's with an ASYNC ASCII RS-232C interface. Your IBM 3179, 3279, 3178 and 3180 can be used as well with the Versalynx/3278. Your 3278 CXT can emulate VT-100/102, HP 260X, ADM 3A and IBM 3101 in conversational mode. The Versalynx/3278 works on local-end remote IBM 3270 systems with async data rates to 19.2 kbps.

Equipped with an auxiliary RS-232C printer port, menu setup and terminal control, the Versalynx/3278 disconnects the IBM CXT from the controller and converts IBM CXT byte strings to ASCII characters and passes them to the main ASYNC port.



State-of-the-art design allows scrolling of the IBM CXT at high data rates.

And, the IBM 3278 customer can dialup IBM mainframes using low cost asynchronous modems at 1200 or 2400 baud and a matching Local Data protocol converter at the host end.

Versalynx/3278 standard model 3185 single quantity discount price.

Call for complete information package (213) 380-7126 or Canada call (416) 737-5941

IBM is a registered trademark of International Business Machines Corporation.

LOCAL DATA

3101 TORONTO STREET, TORONTO, ONT. M6H 1C1 CANADA

The solution is complete for CSWS.

Cullinet
The Communication Solution

CENTRAL & SOUTHWEST SERVICES (CSSS)
2121 SAN JACINTO STREET
DALLAS, TEXAS 75222

IDMS/R

1/23-1/25/84

IDB

1/24-1/25/84

GOLDENGATE

1/24-1/25/84

CUSTOMER COMMENT

THE TOOLS DEVELOPED BY CULLINET (SUCH AS GOLDENGATE ON THE PC AND ADSO ON THE MAINFRAME) HAVE CAUSED THE COMMUNICATION GAP TO BE BRIDGED -- NOT ONLY FROM A DATA TRANSFER ASPECT, BUT MORE IMPORTANTLY FOR VERBAL AND VISUAL INTERFACE. NOW SYSTEMS DEVELOPMENT IS A JOINT PROJECT -- NOT A USER STATING A NEED AND BEING GIVEN A "BLACK BOX", BUT A COORDINATED INTERFACE BETWEEN NEEDS AND TOOLS THAT ARE HIGHLY ADAPTABLE TO THE CHANGING ENVIRONMENT OF PROTOTYPE DEVELOPMENT.

Date

1/30/84

Signature

Sharon Salathiel

NEWS

Professor: OA packs punch to knock out competitors

Harvard educator McFarland says time has come to switch emphasis of OA strategy



CW AT SM

By Edward Warner
CW Staff

ROSEMONT, Ill.—The Harvard University Business School professor who is spearheading the introduction of micros for the school's graduate students urged the roughly 300 people attending the Society for Information Management (SIM) conference here to use office automation systems as a weapon to crush competitors.

In a keynote speech highlighted with humor, Prof.

Warren McFarland, Harvard Business School's expert on information management, said corporations should switch their information systems strategy from one of stamping on mice, or performing clerical tasks, to one of hunting for elephants, or getting the edge on industry competitors. "And there are a lot of elephants out there," he warned.

To illustrate, McFarland noted the case of American Hospital Supply Corp., which has installed order-entry terminals at many of its customer hospitals. The terminals offer the hospitals speedy, telephone-free ordering, including the capacity for emergency orders that can be

filled in 24 hours, the educator noted.

The terminals also tie the hospitals to one supplier, a situation which, he said, competitor Johnson & Johnson painfully discovered when it tried to offer those hospitals a terminal order-entry system of its own. The hospitals refused, McFarland said, and Johnson & Johnson found that "the first one in [with new technology] is the winner."

He also called on MIS executives, a large portion of his audience, to work in closer cooperation with their corporations' strategic planners to achieve the competitive use of information technology.

McFarland said computer technology can be used to erect a barrier to block competitors in a market. Other competitive uses include strengthening relationships with customers or suppliers and changing the intra-industry balance of power or its basis of competition.

Move ahead with strategy

Should only one of those opportunities exist for a corporation, he said, then it should move ahead with that competitive information management strategy.

For an example of how one corporation used terminals to strengthen its existing customer relationships, McFarland pointed to a maker of large, lighted signs that installed terminals in the offices of its major customers.

The terminals allow the customer to call the sign maker's central computer and determine the progress of the ordered sign. They also permit the customer to leave an electronic message. The object was "to try to get [the customer] habitually reliant on the company's kind of services."

To show how the use of office automation technology changed one firm's relationship with its suppliers, McFarland singled out a ma-

nor aerospace manufacturer, which he did not identify, and said the firm had informed its suppliers of what brand and model of computer-aided design terminals it used. The aircraft maker now downloads the specifications for needed parts to its suppliers' terminals as those parts are designed.

While competitive use of computer technology can help a firm become an industry leader, McFarland warned that information

managers must also keep an eye on the technology itself, lest theirs become obsolete.

The manual typewriter, he said, has been completely replaced by the electric typewriter, which itself will soon be replaced by the word processor. Even in word processing, big changes are on the horizon, he said, claiming that voice-actuated word processing systems with 98% accuracy for all spoken words are only a year away from the market.

Systems Programmers

Plan A Logical Move



Join D&B Computing Services where we offer total involvement in systems programming — for new micro OS/2 development or enhancements to our Homestead Center software products.

Consider working for a company where software is the business, not ancillary to it. If you can imagine the advantages, learn more about several challenging positions in our Connecticut headquarters. See our ad in the Positions Announcements section of this issue.

D&B Computing Services

A subsidiary of The D&B Industries Corporation

Special Purchase

THE D&B TECHNOLOGY
ERGO 4000

A 66-Line
Word Processing
Terminal

\$795



Call toll-free 1-800-325-9056
Ask for Department B
44 East University Drive
Arlington Heights, Illinois 60004

Is Your Payroll Tax System Hogging Your Time?



Choose are your payroll taxing software is hogging unnecessary amounts of time, money and resources. BSI-TAX can change all that.

You can save because BSI-TAX is the most extensive software for payroll taxing ever developed.

- Easily updated by non-CPAs
- Not compiled for tax changes in five years
- 400+ consecutive tax updates supplied without an error

- Available in COBOL and RPG III for minis and mainframes

Put payroll tax changes in the payroll department. Get rid of the payroll tax hog. With BSI-TAX you save time, money and resources.

BSI

Business Software, Inc.
387 Riverchase Pk. / Suite 107
Atlanta, GA 30346
(404) 446-3200

IBM
System/38
Probucltivity

NGS

New Generation Software, Inc.

Performance & Price

See you at COMCON Booth #10

800 824-1236, In California 800 823-1230



... and this is Ralph's computer room.

The solution is complete for Harris.

Callinet

No. 826863

Harris Corporation
1025 W. NASA Boulevard
Melbourne, FL 32901

1 DM3/R	3/27 3/1
108	3/12
GOLDENGATE	3/12

These new tools open great new possibilities
for business application systems.

Date

3/19/81

Signature

David Ross

NEWS

Psychological stumbling block mires micro revolution



CW AT 500

By Edward Warner
CW Staff

CHICAGO — As Prof. Richard Byrne tells it, children may be the best people to turn to when a microcomputer crashes. Many children are more adept with microcomputers than adults because all children rely on intuitive thinking and have a vision of the world that expects everything to work, the former college dean said.

Byrne, who spoke to a conference

of the Society for Information Management here last week contrasted the attitude of children with that of adults, who, he said, think rigidly and "expect things to break." The two viewpoints, he said, represent the right and wrong ways of looking at what he called the coming microcomputer revolution.

The greatest problems in managing that revolution will be psychological ones, such as nurturing confidence in executives who "are afraid of uppy machines," he added.

Byrne, a professor at the University of Southern California's Annenberg School of Communication, said executives also fear dealing with unknown technology and dread reveal-

ing their ignorance in such areas. MIS managers, especially, he noted, have to "look like you know or (like) you know somebody who knows."

To deal with the hazards these fears pose for the integration of microcomputers in corporations, Byrne suggested that a buddy system be set up between the group he claims has the greatest fear of micros — those between ages 42-56 — and those engaged in the most childlike love affairs with micros — usually the youngest employees. "You ought to be building teams with young hotshots," he said, "They know everything about micros, but they don't know why you're in business."

Calling it his "water-ski contract,"

Byrne, who claims to have taught microcomputing to 1,500 computer-philobetic executives, said the young hotshots were like the driver of the boat and the older executive like the water skier. "They're going to tow you around the lake," he said.

Byrne also urged executives uneasy about micros to be willing to be ignorant and to be conscious. Consciousness is important, he said, because it forces one to notice things, such as new microcomputing applications. "Confidence is the mortal enemy of consciousness," and so one must keep trying new, riskier approaches to keep one's consciousness high, he said. A willingness to admit ignorance is useful, he continued, because it is the first step in learning.

Byrne also advised the information managers to "leverage what you're best at" when incorporating micros. Micro software, particularly, should be used to enhance something the organization already does well, not something it is having difficulty with, he said. Technology tends to magnify both problems and successes, he argued.

Failure to get organized before incorporating microcomputers is like sitting on top of a rocket and lighting it, he said. "You want to be sure [the rocket] is pointed toward a door." Byrne added two final pieces of advice for the roughly 300 information managers in attendance. "Come from mastery," he said, defining mastery as approaching problems with confidence. And, he added, "Come from aliveness," with a sense of vitality.

To Information Center

FREE! CBT PRESENTATION SYSTEM

Crwth wraps up all your training needs in one great year-end package!

TELEPHONE

CRWTH

Forum to focus on EDI utility for businesses

BALTIMORE — "The World of Electronic Data Interchange — 1984" is the theme of the Transportation Data Coordinating Committee's 16th National Data Systems Forum and Exhibit to be held Nov. 28-29 at the Baltimore Convention Center here.

The forum is aimed at businesses that interchange data for purchasing, invoicing, bills of lading, freight billing, tariffs, public warehousing transactions, claims filing and other application areas, the sponsors said.

Speakers will address how electronic data interchange (EDI) is being used in business today and will offer forecasts for electronic transactions in 1985 and 1986. The need for progress in the field of transportation/distribution tariff data standards for rating, routing and payment will be emphasized, the sponsors said.

Sixteen technical clinics will also be presented on subjects including an introduction to EDI, software, railroads and shippers, motor carriers and shippers, communications, third-party support and micros.

The registration fee for the Forum and Exhibit is \$286, according to the sponsor. More information is available from the Transportation Data Coordinating Committee, 1101 17th St. N.W., Washington, D.C. 20036.

Please rush me more information about the YEAR-END PACKAGE OFFER!

Expiration Date: December 31, 1984 cww

NAME _____

ADDRESS _____

COMPANY _____

CITY/STATE/ZIP _____

TITLE _____

PHONE (____) _____

Crwth Computer Coursewares • 613 Wilshire Blvd. Suite 200 • Santa Monica, California 90401

The solution is complete for Hughes.

Cullinet

Post-Installation Report

No. 003629

Hughes Aircraft Space & Communications
Building C-2/C-172
Los Angeles, CA 90009

IDMS/R	1/23 - 1/25/74
IDB	1/25 - 1/26/74
GOLDENGATE	1/25 - 1/26/74

With all the publicity surrounding the relational features of IDMS/R, there is a tendency to overlook the baseline products which brought IDMS to the place it is today. A series of benchmarks performed against IDMS/R and the current release 5.7 shows IDMS/R performing 25-35% faster in database services, ADS/O, OLG, and Culpnit. This kind of performance improvement is quite impressive.

Date

2/3/84

Signature

Bob Burton

NEWS

COI request to gag M&M Mars denied by district judge

NEW HAVEN, Conn. — U.S. District Judge Ellen B. Burns rejected a request by Creative Output, Inc. (COI), a software company, in Milford, Conn., for a gag order on the M&M Mars candy division of Mars, Inc., which is suing COI over the alleged failure of a program to function as claimed.

COI sought to bar M&M Mars, a maker of candy products, from talking to the press through lawyers and the public relations firm of Hill & Knowlton, which M&M Mars had retained.

Judge Burns rejected the gag order requested by COI on September 17 and stated that "the court finds no serious threat to a fair trial for [the] defendant [COI]. The publicity has been in trade papers, opinion to reach potential jurors."

Burns' opinion stated that Hill & Knowlton "had been hired many years ago and, with respect to the present litigation, has been asked to make this case public only in an effort to discover what experience other customers of the defendant have had

with Optimized Production Technology (OPT) software."

Inappropriate to comment

Dion Moore, the attorney representing COI, last week said it would be inappropriate to comment on the litigation and the judge's order rejecting the gag on M&M Mars. M&M Mars attorneys have sought to contact other COI customers to ascertain their experiences with the OPT software program.

COI had also requested a court order barring these attempts by M&M Mars, which Burns also rejected with the gag order.

"The defendant's principal objection to the publicity of this litigation and the plaintiff's letters to the defendant's customers is the potential adverse impact on OPT in the marketplace. COI has not documented any such impact, but, even if it had, market pressures alone cannot justify restrictions on [the] plaintiff's First Amendment rights or those of its counsel," Burns said in the ruling.

Since the two sides in the case have been unable to agree on a protective order that would guard OPT source code while it is being examined by M&M Mars, Judge Burns' court last week threatened to issue its own order "settling forth the terms and conditions under

which the OPT code shall be disclosed."

Precedent-setting ruling

Last May [CW, July 9] Burns ordered COI to turn over to M&M Mars lawyers the source code for OPT in what patent attorneys believe was a precedent-setting ruling requiring disclosure of the proprietary inner workings of a product.

M&M Mars filed suit against COI in 1983. The suit alleged both breach of contract and fraud in connection with the delivery of the OPT

software program.

M&M Mars alleged that COI had stated it could develop an OPT program that would work effectively and be suitable for the continuous-flow manufacturing process used in the production of nougat, an ingredient in some of Mars' candy products. M&M Mars attorneys alleged that after delivery of the OPT program it became apparent that "the technology would never work in a continuous-flow setting because of an inherent incompatibility."

VAX™ SPREADSHEET WITH GRAPHICS

GRAPHIC OUTLOOK combines an electronic spreadsheet with full business graphics. GRAPHIC OUTLOOK interfaces to your DISPLAY, BAS, D4/5000, or MOSP graphics software. Or you can license it complete with its own graphics software. Our 30 day demonstration tape includes the full spreadsheet with graphics.

- Horizontal and vertical bar charts, pie diagrams, line and scatter plots.
- Draws most popular graphics terminals and plotters.
- A 3-dimensional spreadsheet capability lets you link spreadsheets together.
- Read and write ASCII interface files.
- Journaling, sorting, cell labels, user-defined functions, cell edit.
- Special project scheduling functions.
- Database on-line help, and labels.
- With SPREAD command, communicates interactively with our writer programs that update retrieved values.
- Over 60 built-in mathematical, scientific, financial, statistical, and worksheet manipulation functions.
- Low resolution graphics provides bar charts and line drawings on VT100-type terminals.

Graphic Outlook™

Stanco Microdata Computing

1086 Cambridge St., Santa Barbara, CA 93111

(805) 964-9101

DISPLAY is a registered trademark of DEC
D4/5000 is a registered trademark of Hewlett-Packard
BAS is a trademark of Apple Computer Corporation
MOS is a registered trademark of S&B Systems, Cary N.C.

BECOME A VSAM EXPERT.

Sys-Ed's new 5-day VSAM course will make you a VSAM expert. You'll not only learn how VSAM works, but how to make it work well, and what to do if things go wrong. Even if you're already using VSAM, you'll gain a better understanding of its capabilities and flexibility... like how to select among the options VSAM offers for configuring data sets, both batch and on-line.

Our hands-on case study instruction begins the very first day. You'll write and test three real-life programs and use Access Method Services on our own 4341/11 computer. There are eight 3270 terminals dedicated to the class. You'll receive individual attention from our experienced teachers, and you'll want to bring your actual programming and debugging problems to class.

Sys-Ed's VSAM course contains the most up-to-the-minute information available anywhere, including the latest features and capabilities of VSAM, and is in line with state-of-the-art hardware.

Sys-Ed courses are held weekly and on weekends at our training centers in New York City, Chicago, San Francisco and Dallas. On-site courses at your own computer installation are also available. Classes are limited. For early enrollment or more information call Dave Shapiro: (212) 694-4147.

SYS-ED

35 West 36th St., off Fifth Ave., New York, NY 10018

Inteltec '84 set for Nov. 4

NEW ORLEANS — Adjacent to the site of the 1984 World's Fair, the Inteltec '84 technical session will address the impact of emerging communications technology on energy systems from Nov. 4-7 at the New Orleans Hilton Hotel.

W.M. Miller of Lorain Products Corp. and J.M. Fletcher of AT&T Technologies are cochairmen of the session. Issues to be addressed include generation, conversion, distribution and use of power for telecommunications applications.

More than 100 technical papers will be presented, and a number of manufacturers will display products. Conference registration is \$200 for members of the Institute of Electrical and Electronics Engineers by Sept. 28 and \$225 thereafter. For non-members, the fee is \$215 in advance and \$240 at the session.

More information is available from R.R. Garreau, AT&T Technology Systems, Gateway II, Room 1806, Newark, N.J. 07102.

The Solution
Dial-Up 3270

LineMaster An intelligent device for dial-in access to your mainframe 3270 Bsync line. **LineMaster** is a communications watchdog which keeps a line in service until a user dials in.



- For any remote 3271/46 line—up to 19.2K baud
- Compatible with any 3270 Bsync emulator including microcomputers
- Connects between modem and mainframe
- Installs in minutes.

\$639.

HF

Microform, Inc.
205 Lexington Avenue
New York, NY 10017
(212) 625-1469

Your BEST DEAL to
Buy Sell Lease
IBM
EQUIPMENT!

SYSTEM 34
SYSTEM 36
SYSTEM 38
SERIES 1
TAPE • TERMINALS
DECK • PRINTERS

SYSTEM 4300
SYSTEM 3033
SYSTEM 306X
ALL UPGRADES

Bedford Computer Marketing Inc.

BCM

And the solution is Cullinet.

The Complete Software Solution



At Harris, at Hughes Aircraft Space & Communications, at Central & Southwest Services and dozens of other companies, the solution is in place.

Installed and contributing to organizations with the foresight to recognize and respond to two simple facts:

First, that more than ever before, the *way* in which information is managed is fundamental to the *degree* to which the business succeeds. Second, that any information management system that fails to provide for total organizational integration falls short of its mission.

Of the thousand-and-one companies in the software field, only Cullinet—*only Cullinet*—has created a complete set of functionally superior, fully integrated software products designed to meet the needs of everyone in the organization, from line staff to upper management and everywhere in between.

Through the total integration of database management, applications and decision support software, we have made it possible for organizations to implement a true information management strategy:

A strategy that ensures continuity throughout the organization. That eliminates redundancies. That provides easy, timely access to information and a common basis for trafficking and controlling it. That is not just proving successful, but is already *proven* successful.

In other words, the fragmented approach that has plagued computer users in the past is now a thing of the past. The solution is complete. And the solution is Cullinet.

If you have a responsibility for information management in your organization, we encourage you to attend one of the 700 Cullinet Seminars scheduled internationally. You'll find the Fall/Winter schedule on the following page.

Cullinet

We understand business better than
any software company in business.

© 1984 Cullinet Software, Inc., Watwood, MA 02090-3308

NEWS

WASHINGTON
UPDATEFederal officials plan
automated driver file

WASHINGTON, D.C. — U.S. Department of Transportation (DOT) officials recently announced plans for fully automating the 24-year-old National Driver Register so that officials in one state can quickly determine if a license applicant has a bad driving record in another state.

DOT said it now stores de-

talled state reports of suspended and revoked driver's licenses in a central computer file and then mails the information to states upon request — a process that takes up to two weeks.

The new system, which will require states to upgrade their computer systems, will improve the response time by using data communications to send a summary report showing the states that have "adverse reports" on a driver.

To mitigate the privacy concerns about having a national data base, the detailed driving records will be stored only in each state's computers, where they can be retrieved by a requesting state.

The new system will be tested in four states next year in preparation for nationwide conversion by 1989, as ordered by Congress, DOT said.

DOD to conduct survey
to assess DP security

WASHINGTON, D.C. — The Department of Defense plans to conduct a survey of 2,500 military contractors handling classified data to assess the computer security of their data processing operations, according to documents recently obtained from the Department.

The survey, to be conducted

this year by the Department's Computer Security Center (CSC, Sept. 17) is part of Defense Secretary Casper W. Weinberger's effort to upgrade computer security at military installations and contractor sites.

In a Jan. 12 memorandum, he ordered a thorough review of military computer security and the preparation of policy recommendations "to ensure that security measures keep pace with the anticipated expansion of automated information systems... in the late 1980s and beyond."

Congress OKs military
software upgrade

WASHINGTON, D.C. — Congress recently gave final ap-

proval to legislation encouraging the U.S. Department of Defense to upgrade the computer software used at its procurement centers so it can spot overcharges on spare parts.

Sponsored by Sen. Jeff Bingaman (D-N.M.), the measure was introduced by reports that much of the procurement software is outdated and cannot produce price-variance reports that highlight large price increases (CW, Sept. 3).

The provision, which specifically requires the Pentagon to produce a Computer Capability Improvement Plan, was included in the final version of the Defense Authorization Act for Fiscal 1985. The measure was approved by the House on Sept. 26 and by the Senate on Sept. 27.

IBM 3270
USERSSEEKING CANDIDATES
WISHING TO EXPAND THEIR
PC CAPABILITIES TO
INCLUDE IBM® 3270
REMOTE EMULATION.

Candidates should possess either an IBM PC or Digital Rainbow 100® with MS-DOS or CPM-86/80 operating system.

Your goals should include converting your PCs into IBM 3270 display stations and printers.

In return, Polygon® offers data entry, on-line updating, program development and text file transfers at speeds up to 9600 baud.

There are a variety of additional opportunities for applicants seeking asynchronous and synchronous terminal emulation and file-transfer capabilities on the mini, micro, and mainframe levels.

Candidates should contact Polygon's Department of Sales Recruitment. Phone calls please!

Representatives from Polygon will be available to speak with prospective candidates personally at COMDEX/Fall, Las Vegas Convention Center, Booth 4300.

THE DIFFERENCE IS EXPERIENCE.



polygon
associates, inc.

1024 Executive Parkway
St. Louis, Missouri 63141
314/576-7705

AN EQUAL OPPORTUNITY SOFTWARE VENDOR M/F

1 IBM is a registered trademark of International Business Machines Corporation.
2 Rainbow 100 is a registered trademark of Digital Equipment Corporation.
3 Polygon is a trademark of Polygon Associates, Inc.

Stop us at
COMDEX/Fall '84
November 14-18, 1984
Las Vegas Convention Center
Las Vegas, Nevada

Courses to aid in OA plans

SARANAC LAKE, N.Y. — The American Management Associations (AMA) are offering a series of courses designed to aid managers in assessing, developing and implementing office automation (OA) strategies.

Titled "Automating the Office: A Tactical Guide for Success," the courses are scheduled to be held at the AMA Management Center in Chicago Oct. 23-24, at the Amfite Hotel in Los Angeles Nov. 7-9 and in New York Dec. 10-12. No meeting place has been assigned for the New York course dates.

A spokesperson for the AMA said the course is designed for upper management and DP and MIS executives who

have already begun OA efforts.

The course will include an overview of the technical, financial, political, organizational and functional considerations of a successful OA implementation. OA tools for text and document production, word processing, data manipulation, analysis and decision support, communications, networking and messaging will be reviewed in addition to an OA vendor overview.

The cost to attend the courses is \$695 for AMA members and \$800 for non-members. Information may be obtained from AMA, P.O. Box 319, Saranac Lake, N.Y. 12963.

Wanted: Software stories

"Off-the-shelf" applications software is here to stay. January's Special Report will take a look at applications software packages and their increasing use in the marketplace today.

We will look at how applications packages are being marketed and where they are being used.

Contributions to the Special Report should take one of two forms: a tutorial article, discussing an issue or trend; or an applications story, outlining a particular user firm's experience.

Articles must be typed, double-spaced and range in length from four to six pages. Artwork, such as charts, graphs and photographs, is also welcome.

Authors should include a brief biography and a telephone number at which they can be reached. The deadline for submission is Nov. 5.

If you have a story to tell or any questions to ask, send them to Janet Fiderio, Special Reports Editor, Computerworld, 376 Cochituate Road, Box 880, Framingham, Mass. 01701.



The complete Seminar schedule.

The best way to become acquainted with Cullinet's Complete Software Solution is to attend a Cullinet Seminar. Chances are, you won't have to travel far to find one. They're conveniently scheduled throughout the year and throughout the world.

To arrange to attend one of the Seminars listed below, phone, toll-free, 1-800-225-9930. (In MA, the number is 617-329-7700.) Or send in the coupon below.

[illegible]

"Yes, I'd like to attend a Colliet Seminar." C02954

Please enroll me in the _____ (Date) _____

Seminar in _____

Name _____ (Print)

Title _____

Company/Department _____

Address _____

City/State/Zip _____

Telephone _____

Sent to Colliet Seminars, 600 Blue Hill Drive, Weymouth, MA 02090 3036

* (Go here and file under "Must Do")

Cullinet

**We understand business better than
any software company in business.**

© 1984 Cultrix Software, Inc., Westwood, MA 02090-2195

"Rockwell International eliminates order management paperwork and ships products faster with a Tandem NonStop[®] Computer System."

Robert P. Mathews, VP Plant Controller,
Avionics Group,
Rockwell International Corporation

Our Tandem NonStop computer helps us dramatically streamline order tracking for our broad line of products here at the Collins avionics facilities in Cedar Rapids. This automated operation has meant we've been able to ship our products faster, as well as respond to customer inquiries in a much more timely, accurate fashion.

The Tandem system consolidates all data pertaining to the orders, from order entry to scheduling, inventory, picking lists, and

right on down the line to shipping. And because the system is on-line, other departments have immediate access to this information as well.

Accounting, for example, now generates invoices automatically, resulting in much improved cash flow. Manufacturing is saving \$175,000 a year in internal freight charges due to the reorganization of ordering and shipping procedures; and the Group as a whole has been able to eliminate more than 300,000 reproduced documents a year.

Other system benefits contributing to our improved

customer service include better control of backorders, more accurate pricing information, and the ability to make detailed forecasts of market conditions for planning purposes. The net result is an operation that is helping us achieve some very significant gains in plant productivity.

The NonStop System.

Ideally suited to on-line transaction processing where continuous availability of up-to-the-second information is critical to your business.

Tandem. Fully supported by a worldwide sales, training, service and manufacturing organization.

For information on how a Tandem NonStop system can improve your productivity or your P/L statement, call your local sales office or Tandem Computers Incorporated, 19333 Vallico Parkway, Cupertino, California 95014, U.S.A. Toll Free 800-482-6336 or '408' 725-7500 in California.

TANDEM
NonStop Transaction Processing

NEWS

INTEGRATED SOFTWARE PACKAGES FOR IBM PERSONAL COMPUTERS AND SELECTED OTHER MICROCOMPUTERS

	Lotus Development Corp., Mansfield, Mass.	Ashken-Tate Culver City, Calif.	General Information Systems Beverly Hills, Calif.	Calsoft Software, Inc., Westwood, Mass.	Other
Package	Symphony Data	Framework	Chrysalis 386	Goldstrike	
Minimum memory recommended (in Mbytes)	128	384	512	320	
Hard disk required?	No	No	No	Yes	No
Major applications	WP, DBMS, spreadsheets, communications	WP, DBMS, spreadsheet, graphics, forms processing, outline generator, communications	Spreadsheets, graphics, WP, DBMS, forms management, communications	WP, DBMS, information management, spreadsheet, graphics, communications	
All applications in memory simultaneously?	Yes	No	No	No	No
Max. no. of windows on-screen	Split-screen	Unlimited	4	Split-screen	20
Ability to write macros?	Yes	Yes	Yes	Yes	Yes
Dynamic updating of data between applications?	No	Yes	Yes	Limited	No
Multitasking?	No	No	No	No	No
Outboard text/graphics output?	No	Yes	No	Yes	Yes
Data exchange between applications data on-screen?	Yes	Yes	Yes	Limited	Yes
Data-importing formats	ASCII	ASCII, Dbase II, Dbase III, 1-2-3	Text, dBase, Dbase II, Paradox, dBase	ASCII, dBase, Dbase II	Text, dBase
DBMS					
Max. fields/record	80	Limited by hardware	80	255	255
Max. records/file	655		255	32K	255
Relational data base manager	No	No	No	Yes	Yes
Sorts by how many fields?	1	1	6	Any number	25
SPREADSHEET					
Max. data rows by columns	255 by 255	Limited by hardware	655 by 50	2,048 by 256	255 by 2,559
No. of built-in spreadsheet functions	30	159	30	Over 50	Over 60
Number of chart types	None	6	6	12	10
"What you see is what you get" word processing	Yes	Yes	No	Yes	Yes
Advanced communications features	Supports two simultaneous communications sessions	Xmodem batch transfers, multiple protocols	File duplex, transmission of any sort of user types	Information link in Calsoft's Information Database on mainframes	No communications
Terminal emulation	—	—	IBM 3270	IBM 3270	—
Price	\$340	\$695	\$695	\$795	\$695

On Demand

LINK from page 1

new software has not reached industry expectations, experts say. Sales remain far below those of star products, such as Lotus' Development's 1-2-3.

"While we're finding that the new products are moving to the cash register, 1-2-3 still absolutely outsells them," said Margaret Rodenberg, manager of product management for Entre Computer Centers in Vienna, Va. "We're selling much more 1-2-3 [in relation] to Symphony than we had anticipated," said Anthony Morris, president of Morris Decision Systems, Inc. of New York.

And the reaction in many large organizations has been lukewarm. "We're not very enthusiastic," said a manager responsible for personal computers at a multinational bank who has evaluated the new crop of software. "Symphony is a technical success but an artistic failure. Framework seems to be a promising product, but it was rushed to market to meet that hypothetical July 1 ship date."

"We have no particular desire to go into Symphony," said Ray Barron, information center manager at Michigan Consolidated Gas Co. in Detroit. "People don't have a major call for transferring data between programs, and some of the [Symphony] programs are a little weak."

Other executives agreed that the packages must overcome several major stumbling blocks before achieving widespread acceptance. Leading the obstacles list is the sheer difficulty many users encounter in trying to find their way around these complicated programs. "I've talked to people who really don't know where to begin," said Thomas Billadeau, president of Office Sys-

The charts above represent a sampling from the multitude of integrated macro software packages currently available running IBM's PC-DOS or Microsoft Corp.'s MS-DOS. With the exception of Lotus Development's Chrysalis 1-2-3, the first two packaged products to reach widespread acceptance, all the products listed above first shipped within the past six months.

While some packages run on a 286-bit personal computer with floppy disk drives, others require a hard disk drive and a graphics monitor.

Workstation is defined here as a true workstation environment, with keyboard and laser printing functionality. Although PC-DOS and MS-DOS are single-tasking operating systems, the software listed here is for multi-tasking of one true multitasking.

In "what you see is what you get" word processing, the screen displays document pagination and text characteristics to the extent that the printed document looks like the printed package of the true multitasking.

Intuitive Software, Inc.'s Smart Software is offered only as independent modules or as a combined package and can be viewed as an all-in-one package or as a product family.

tems Consulting Group in Cambridge, Mass. Several software are training firms encourage first-time Symphony users to jot down notes on paper to remind them where they are and where they have been.

"All-in-one" functions often compete at a disadvantage with dedicated stand-alone applications. "No one vendor is going to produce the ultimate

application of each type," one user commented. "It's ludicrous to think that one vendor can be all things to all people."

Meanwhile, other forms of integrated software — families of compatible applications and operating environments that provide a common interface for stand-alone programs from various suppliers — may offer many of the same advantages (see related story page 38).

In addition, the first releases of all-in-one products may lack the polish and the completeness of stand-alone packages that have been fine-tuned for a year or two.

In one case, Wendy Lotz, analyst in technical services at Smith Barney Harris Upham Co. in New York, initially gave Softend, Inc.'s Aura high marks. But she later found that her copy did not work with her letter-quality printer, was limited in report size and did not import or export files from other programs. While she expected later releases to clean up these problems, she shelved the program. "Overall, the product was great, but the little things turned into major things," she summed up.

Most packages also are copy-protected and sold on a one-package-per-machine basis, which severely discourages their use in local-area networks.

Other potential obstacles for all-in-one macro software seem more minor. The new integrated packages typically demand 512K bytes of random-access memory and a hard disk drive to run comfortably, but many companies already are making such configurations standard. And while the software typically carries price tags between \$500 and \$900, the cost per function works out to less than \$160, and pricing is not seen as critical.

The integrated packages typically feature on-

NEWS

INTEGRATED SOFTWARE PACKAGES FOR IBM PERSONAL COMPUTERS AND SELECTED OTHER MICROCOMPUTERS

	Lotus Development Corp. Cambridge, Mass.	Software, Inc. Salem, N.H.
Package	Symphony	Aura
Minimum memory recommended (in kilobytes)	320	256
Hard disk required?	No	No
Major applications	Spreadsheet, graphics, WP, DBMS, communications	Applications development, WP, DBMS, spreadsheet, graphics
All applications in memory simultaneously?	Yes	No
Max. no. of windows on-screen	Unlimited	None
Ability to write macros?	Yes	Yes
Dynamic updating of data between applications?	Yes	Yes
Multitasking?	No	No
Combined text/graphics output?	No	Yes
Data exchange between applications data on-screen?	Yes	No
Data-importing formats	VisiCalc, Dbase II, dBase 1-2-3, Wordstar	Dbase II, 1-2-3, Accel, Wordstar
DBMS		
Min. fields/record	256	256
Max. records/files	8K	Limited by disk capabilities
Relational data base manager	No	No
Sorts by how many fields?	3	9
SHEETSPREADSHEET		
Max. cols. rows by columns	8,192 by 256	255 by 63
No. of built-in spreadsheet functions	Over 50	Over 50
Number of chart types	8	5 plus customized diagrams
"What-you-see-is-what-you-get" word processing	Yes	No
Enhanced communications features	Quick switch from application to communications sessions	W/Aura Comm option: unattended file transfer; ability to send, receive and print simultaneously
Terminal emulation	—	W/Aura Comm option: IBM 3270, Digital Equipment Corp. VT100, VT52
Price	\$495	\$495

disk tutorials, menu interfaces, Help screens and other standard-vanilla state-of-the-art micro software features.

Beyond these common attributes, there is tremendous variation among packages, and customers can consider their demands for time management functions, application and report generators, password protection, mouse interface devices, terminal emulation and other entries on an extensive list.

One critical concern is the integrated package's ability to import and accept files from other programs. Andrew Langlois, corporate director of MIS at Moore McCormack Resources, Inc. in Stamford, Conn., noted that 1-2-3 "has been a tool that has been so widely understood, I want to get things into Lotus so that people can manipulate them."

Naturally enough, other specific features appeal to different users.

Symphony's powerful command language has drawn much attention, but users often consider the availability of word processing more important.

"I like the word processing very much; it's very simple to get into and use," Langlois said. "I'm not quite as pleased with the data base." Symphony's spreadsheet is excellent, and communications are "very straightforward," he said.

When Symphony came out, "we upgraded most of our copies of 1-2-3 and bought replacements," Langlois added. "It was a natural move for us. We have 80 [personal computers], and virtually every one has 1-2-3."

Within Framework, "it is easy to consolidate and view different files; one is not limited to a single spreadsheet as in Symphony," said David Ferris, chairman of Ferris Corp., a San Francisco



consulting group. Framework also "is word-oriented and enables one to organize thoughts with an outline processor," Ferris noted. "That seems to be the way most people work."

The Software Group claimed its Microsoft Corp. MS-DOS-based Enable is unique in offering true multitasking capabilities. A central supervisory module reportedly contains functions common to all applications and isolates applications from the operating system. This permits Enable to "treat MS-DOS as a serial resource" and to run up to four tasks concurrently, said Robert Hamilton, the firm's vice-president of development.

The importance of multitasking "is a function of who's at the keyboard," Hamilton said. "If you deal with on-line services a great deal or do an awful lot of printing, it's really going to be handy."

Cullinet Software, Inc.'s Goldengate is among the packages boasting a micro-mainframe link. In Goldengate's case, the program can be tightly linked to Cullinet's Information Database on an IBM mainframe, providing access to mainframe DP and storage capabilities, electronic mail and data sharing with other personal computer users.

Preparing to install Goldengate along with Cullinet mainframe software, Williams International Corp. of Walling Lake, Mich., expects the integrated micro package to work as well as stand-alone packages, according to micro manager Gregory Enders. "We don't expect it to be a super data base, but we do expect the spreadsheet and graphics to be at least as good as what we've got," Enders also noted that the mainframe should "act like drive D," storing information absolutely transparently to Goldengate users.

Software's Aura is a "data-base-centered application generator with a damn good capabilities beyond what Framework and Symphony can do," Company President David Wetherell claimed earlier this year. One of these capabilities allows

NEWS

**The Auto-Recording
Cassette**

Microestigator
 (smaller than a
 large estigator)
 There are
 with standard
 can
 the

most common reason as the strongest need in their software

MA 01901



Introducing the 8800.

Never has a protocol converter been so flexible.



This revolutionary new design delivers the widest range of capabilities you can buy in a box. There's up to twenty-eight ports, including "slide doors" that enable a terminal to select as many asynchronous connections as you need. Plus, a pair of synchronous host ports. Now you have the ability to configure a port the way you want. That's dynamic port allocation—available only on the new Kaufman 5800 Protocol Converter.

Let's talk about the 8800. Call or write the Kaufman Marketing Department.


KAUFMAN

As a Christian, I believe that the Bible is the inspired Word of God. I believe in the virgin birth, the deity of Christ, His atoning death, His resurrection, and His return to earth. I believe in the Holy Spirit, the Church, and the Kingdom of God. I believe in the power of prayer and the importance of good works. I believe in the love of God and the love of my neighbor. I believe in the hope of eternal life. I believe in the power of the Gospel to transform lives. I believe in the importance of family and community. I believe in the value of education and the pursuit of knowledge. I believe in the importance of service to others. I believe in the power of forgiveness and the importance of reconciliation. I believe in the love of God and the love of my neighbor. I believe in the hope of eternal life. I believe in the power of the Gospel to transform lives. I believe in the importance of family and community. I believe in the value of education and the pursuit of knowledge. I believe in the importance of service to others. I believe in the power of forgiveness and the importance of reconciliation.

145 East Dana Street
Mountain View, CA 94041-1573
415/962-8811 FAX: 910/379-5021

DAVOX

In a single delivery, we
helped Burlington Northern Air Freight
double their productivity.



NEWS

Scottish academic/corporate venture targets AI R&D

GLASGOW — Academia, private business and government in Scotland have joined forces to develop fifth-generation software tools for both the corporate sector and the public domain.

The Turing Institute, which operated out of its founders' offices at the University of Edinburgh for the first year of its existence, re-

cently relocated near Strathclyde University here.

The nonprofit organization is intended to make advances in research and development in the machine intelligence field and to help bring those advances to market through corporate affiliations, said James Richmond, general manager of the institute. The institute received

initial support from the British government's Scottish Development Agency.

Richmond said that a key difference between the institute's approach and that of other academic/corporate partnerships will be that the corporations can send employees to work with the institute, "rather than get served every month with

tons of paper that they can't find a use for."

The affiliates, who are charged £20,000 annually, can take advantage of training programs, remote access to the institute's Digital Equipment Corp. VAX-11/760 superminicomputers and the chance to market programs the institute develops, according to Richmond. He

said there are now 10 affiliates, including one American company, and there will be a maximum of 15.

The institute was organized by executive director Donald Michie, former head of the Machine Intelligence Research Unit at the University of Edinburgh and Chairman of the Board Lord Balfour of Burleigh, director of the Bank of Scotland.

Richmond said that the institute's work will be released in any of several forms, either through publicly available academic papers or as commercial products through the affiliated companies or technology transfer companies associated with the institute and Strathclyde University.

The institute is featuring 10-week courses for representatives of the affiliates and for visiting scholars from around the world. The courses focus on expert and knowledge-based systems, robotics, machine intelligence and computer vision.

The annual report states, "The prime activity of the institute will be to conduct long-range research and industrial teaching. Its role cannot be to solve industry's immediate technical problems, but rather to explore and make accessible new problem-solving capabilities and tools."

LINK from page 31

users to set up their own menu-driven applications. "We have no commands, and you don't have to go through our menus," Wetherell said.

The strength of Alpha Software, Inc.'s Electric Desk lies in its simplicity, said Dan Davenport, manager of audiovisual services at Minolta Corp. in Ramsey, N.J. and an early user of the software. "It's very comfortable to use," he said. "I didn't have to go through all sorts of weird contortions to [understand] it."

Integrated packages place large demands on internal memory, disk storage and the CPU of the basic IBM Personal Computer. In the future, the packages will benefit from the spread of more powerful micros such as the Personal Computer AT.

Important software drawbacks, meanwhile, are directly attributable to MS-DOS limitations, such as the operating system's direct-memory address capability and single-tasking nature. Many developers expect integrated software to make a natural transition onto new machines running multitasking, multitier software under another operating system, with AT&T's Unix seen as the leading candidate.

NEWS

INTERNATIONAL
SUPPORTOn Reproduction
and Network

AUSTRALIA

MELBOURNE — The massive Computerized Legal Information Retrieval System went on-line at the New South Wales Law Society recently, becoming one of Australia's largest commercial data bases. The company will begin linking legal firms to the system in small clusters over the coming weeks. Full commercial launch is slated for February 1985.

SYDNEY — Datacorp Inc. has built-race Wang Laboratories, Inc. and IBM for a local-area network contract from the National Roads and Motorists Association here. The Datacorp Arcnet-based local-area network will link the organization's information center and its Amdahl Corp. 5860 machine. The system will replace a six-year-old Wang 30 system and a five-year-old IBM 3750 system and support about 18 terminals.

BRAZIL

RIO DE JANEIRO — The bill that will prevent foreign companies from dealing in Brazil's computer industry has just won overwhelming approval from the Brazilian Congress here. According to the terms of the bill, multinational firms already manufacturing computers in Brazil, including IBM and Hewlett-Packard Co., may continue to conduct business here, but no new foreign companies will be admitted. The passing of the nationalistic "market reservation" legislation follows a year of heated debate on the subject. The bill presently awaits the signature of President Jose Baptista Figueiredo.

CANADA

MISSISSAUGA, Ontario — An \$80 million investment has put North Telecom Ltd. firmly in the race to develop the world's fastest semiconductor chip and also placed Canada on the map as a new center for advanced semiconductor research. The communications giant will spend half of the money to expand its semiconductor facility in Mississauga, Ont., and the rest to import the needed chip-making equipment. The micro circuit design facility is expected to be operational in 1987 and will focus on developing advanced Onco telecommunications chips with 200,000 circuits in half the space of existing chips.

JAPAN

TOKYO — Since the IBM 5550 small business system equipped with Kanji-character word processing software has met with success here, IBM reportedly intends to market another addition to the personal computer line in Japan with a lower price tag. The new machine will be compatible with the 5550, have an operating system specially designed to handle the Japanese language and feature a Microsoft Corp. MS-DOS option. The system will use 3.5-in. microfloppies,

come with two disk drives and cost approximately \$1,350, sources said. The IBM machine will compete directly with NEC Corp.'s 9800 series.

TOKYO — Mitsubishi Electronics Corp. has announced the Tugata Katsuben-ki, a security system intended to monitor computer rooms. The product reportedly identifies people's hands when displayed before a camera, accompanied by the individual's password code. The security system has a capacity of 250 personnel and costs \$7,500, a spokesman said.

TOKYO — Fujitsu Ltd. has unveiled the Fujitsu Integrated Digital Communication System (Fidica), which is intended to become an international communications network. Fidica can reportedly transmit text

data, voice data, image data and coded data. The system offers communications savings up to 30%, according to a vendor spokesman. Fujitsu plans to phase the system into their own domestic and foreign offices in the coming months.

TOKYO — Japanese market analysts predict sales of 100,000 home microcomputers by year-end, with the introduction of the standard MSX operating system. At the same time, Japanese manufacturers are gearing up to compete against the European market leaders, Sinclair Research Ltd. and Commodore Business Machines, Inc. In response to the Japanese threat, Commodore and Sinclair spokesmen called the MSX standard "too late" and accused Japan of "stealing" software at the Model T Ford stage.

UNITED KINGDOM

LONDON — According to consultant Peter Mayes, the UK computer industry cannot compete with the Japanese. "It is totally unrealistic to believe that the UK can match the Japanese fifth-generation project," he said at Impact '84, held here.

OXFORD — Dr. Nigel Harding has offered a mugshot of champagne to anyone who can successfully decipher his "unbreakable code" for transmitting information between personal computers. The consultant biochemist said that breaking the code would take hundreds of years — even with a supercomputer. Harding recently invited two mathematicians from Cambridge University to take a crack at it. Both failed.

Discover the Bold New Look in Terminals from Radio Shack



Radio Shack
THE PC LINE

New 1985 Computer Catalog. Send me a free copy.
Send for Radio Shack, Dept. 100
200 One World Center, Fort Worth, Texas 76101

NAME	_____
ADDRESS	_____
CITY	_____
STATE	_____
ZIP	_____

NEWS

U.S. market, joint ventures draw Israelis to Info '84

By Susan Shalinsky
CI Staff

NEW YORK — When asked why Israel hosted the only national pavilion at the recent Information Management Exposition & Conference (Info '84), Amiram Shore hypothesized it was the "special relationship" between the U.S. and Israel that drew the contingent to New York.

"The American market respects the Israeli's talent and ability to do things," Shore said. "And we believe the biggest market in the world is in the U.S."

"Info is a very specific show — it does not have the reputation of an international show like the [National

'We don't have cheap fingers. What we do have are inexpensive brains. There is an excellent educational institute in Haifa, and we have a highly educated population. We are application software rich.'

Peter Muhirad — U.S. Director, Israeli Trade Center

Computer Conference) or Comdex, so just a few foreign companies make the trip," Shore continued. "But in a small show like this, we think we get the right audience. It's smaller and less crowded, so you can really show yourself."

Shore is president of the Israeli computing conglomerate MMI Computers and Software Industries Ltd. With financial backing from the Export Institute of Israel, Shore came to the Info '84 conference along with representatives from seven other

companies from his country.

Peter Muhirad, U.S. Director of the Israeli government's Trade Center here, said that the Israeli pavilion has become a tradition during the past four years at Info shows and has produced some interesting side effects.

"Last year we had people lined up 40 deep who wanted to move to Israel to work. Jewish people go to Israel to live in a Jewish state all the time — we just did not expect them to make inquiries here. So we put them in touch with the right recruiting firms. That was one offshoot of our presence at the show last year."

Potential joint ventures

More important, the show serves to set up Shore and his compatriots with potential joint ventures in the U.S., Muhirad said. "This is really the best route for an Israeli firm. We try to put people in touch with potential partners because offshore application development just does not work."

Muhirad's job with the government of Israel's Trade Center is to represent Israeli businesses in the U.S. and to promote trade and exchange agreements. He explained that Israel was a highly computer-literate country, and business agreements with the U.S. can prove to be lucrative.

"We don't have cheap fingers. What we do have are inexpensive brains. There is an excellent educational institute in Haifa, and we have a highly educated population. We are application software rich," he noted. Also, practically all software is written in English, Shore added.

Currently, Israel's software sales outside its borders are negligible, but Amnon Ovadia hopes that 75% of his business will soon be international. Ovadia, also at the Israeli pavilion, was representing a software company called Product Computers Ltd., whose main product is Dentis, a dental clinic management system that runs on the IBM Personal Computer and compatibles. Ovadia pointed out that in order to be profitable, his company must sell abroad.

"There are only 2,000 dentists in Israel — in New York City alone there are 12,000," he said.

But can they sell the same package to a New York end user and to a user in Tel Aviv? Do professional identities transcend cultural lines and international boundaries, or is an Israeli DP manager different from his American counterpart?

Sophisticated end users

"End users in both countries are very similar. They're very sophisticated. There are not many beginners anymore. They know how to evaluate products," according to Shore.

"Especially in the U.S. people want to have the most updated product available," Shore added.

Muhirad seconded Shore's opinion. "Users are about the same. But DP managers make about 30% less in Israel. And, of course, getting equipment takes a long time in Israel."

Ovadia claimed that "Americans make up their minds quicker.... Europeans take much more time. Other than that, they are the same everywhere. Users just care about solutions."

Unleash The True Potential Of The 68000 Unix Environment

PHILON INTComplexes are so fast, your concept of speed will never be the same. Complexes thus unleash the ultimate power of the 68000 and drive UNIX® to its fullest potential. PHILON INTCComplexes redefine performance in benchmarks — UP TO 47 TIMES FASTER (see benchmark chart).

FLEXIBILITY — It's built in. PHILON INTCComplexes are specifically designed to free programmers from artificial constraints (such as 64K program size or data file limitations) and allow efficient development of highly-optimized application systems. You can even link program modules in the same or different languages.

DEBUGGING — It's a snap. The Psi-Analyzer high-powered debugger vastly increases programming productivity.

THOROUGH TESTING — RESPONSE SUPPORT

You demand reliable complex; PHILON's quality assurance commitment delivers.

ACCURATE, EASY-TO-UNDERSTAND "DOCUMENTATION" — It's part of The PHILON Approach.™ Plus, you can become part of a comprehensive customer support program designed to keep productivity at its maximum. This is what you will come to expect from PHILON.

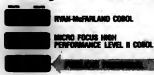
RECOMPILER EXISTING APPLICATIONS FOR DRAMATIC RESULTS

Dramatic speed improvements can be achieved by simply recompiling with one of these corresponding PHILON INTCComplexes.

INMACOM32™	PHILON INTCOM32
CRASIC™	PHILON INTCASIC-C
MBASIC71	PHILON INTCMBASIC-M

Any full implementation of K & R: "C".....PHILON INTC

BYTE Magazine Sieve Benchmark



In a comparison of SieveBenchmarks COM32, L3A, Micro Focus COM32, 2.0 and PHILON INTCOM32, L3 using the BYTE Magazine sieve benchmark, the results are: PHILON INTCOM32, 47 times faster than Micro Focus COM32, 2.0 and 47 times faster than INTCOM32, L3A.

Unleash the true potential of your 68000/UNIX system, call Bob Goldstein at (212) 867-8260 or write to PHILON, Inc., 645 Avenue of the Americas, New York, NY 10011

PHILON™

UNIX is a trademark of AT&T Bell Labs.
"PHILON Approach" is a trademark of PHILON Corp.
CRASIC is a trademark of PHILON Systems, Inc.
INTCOM32 is a trademark of PHILON, Inc.

NEWS

Private sector must act on VDT or U.S. law will: Speaker

By Kathleen Sullivan
Of West Coast Bureau

SAN MATEO, Calif. — Unless the private sector takes an assertive role in dealing with the concerns raised by VDT operators, including questions on ergonomic design, job organization and health and safety matters, the government will intervene and impose restrictive legislation to deal with the issues.

That was the assessment of Alan F. Westin, professor of public law and government at Columbia University, who addressed a seminar audience last week at a day-long conference on VDTs, sponsored by the American Electronics Association (AEA).

According to Westin, who recently completed a two-year study on the ways in which VDTs are currently used in American offices, legislators will decide within the next two years whether private industry has adequately addressed the concerns of VDT users.

If they perceive that only a handful of companies have responded, they will take matters into their own hands, he said.

Forward vision

In his study, Westin found that industry has taken some forward strides over the past two years. In early 1983, very few U.S. firms were producing ergonomically designed terminals, he said. European companies, by contrast, were selling a variety of terminals that included features such as detachable keyboards and monitors that could be tilted and swivelled.

But that situation has changed, he said. American companies now sell a variety of terminals that include adjustable features. In addition, manufacturers and managers are paying more attention to the importance of ergonomic design principles in workstation furniture and accessories, he said.

Other issues are also the focus of increased attention, Westin said. Two years ago, employers were able to put issues raised by VDT users on the back burner, he said.

But today, with labor unions and women's groups voicing their concerns over health and safety issues, the debate has gained national prominence.

Effects on vision, pregnancy

Much of the attention has focused on the effects of VDT use on vision and pregnancy. Walter E. Baker, AEA's senior VDT ergonomics advisor, told the audience that no scientific evidence has been presented linking VDT use to long-term vision problems, miscarriages or birth defects.

Citing a number of studies, Baker said the radiation emissions from VDTs are well below all health and safety regulations.

Yet other groups maintain that further study is required. The working woman's organization, 9 to 5, has called for a national study of VDT operators that would assess whether they face greater risks than other office workers.

In a telephone interview, Elaine Taber, 9 to 5's program director, said the issues related to VDT worker health and safety are "definitely still

an open question."

In its own surveys, the group has identified a variety of operator concerns, including high stress levels, vision problems, muscle strain and problems experienced by pregnant women.

"We want to know what's causing these problems," she said. No scientific studies have conclusively ruled out a connection between VDT use and user health problems, she said. The questioned whether industry spokesmen who have dismissed user concerns are "really in touch with users."

According to Robert Arndt, another panelist at the AEA seminar, the introduction of a new technology into

the office can be a cause of stress among workers.

Arndt recommended that companies involve users from the beginning in the decision-making process, and give them a voice in the selection of companies should address the full range of worker concerns — from health and safety issues to job security concerns — when installing a new system.

Arndt recommended that companies involve users from the beginning in the decision-making process and give them a voice in the selection of the system. In addition, companies should offer training and support, including access to personnel who can answer health and safety questions.

Finally, firms should create an avenue of redress for employees to ensure that concerns about the technology can be addressed on an ongoing basis.

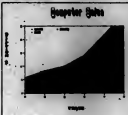
Richard J. Curiale, an attorney with a San Francisco-based law firm that represents management concerns in labor relations disputes, warned the audience of the consequences of not paying attention to user concerns.

"If a user complains, take those complaints seriously," he said. "I can guarantee that if you don't, the next time they file that complaint, it won't be 'with you.'"

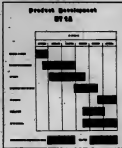
Instead, he predicted, the user will turn to a labor union for help.

WHEN SPREADSHEETS DON'T GIVE YOU THE PICTURE...

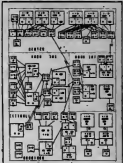
LINE CHARTS STATISTICS



GANTT CHARTS PROJECT SCHEDULING



FLOW CHARTS ORGANIZATION CHARTS



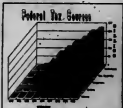
MULTI-SCALE BAR CHARTS RELATIVE BAR CHARTS



3-DIMENSIONAL DRAWINGS CAPABILITY



3-DIMENSIONAL BAR CHARTS



THE FIRST COMPLETE GRAPHICS PROGRAM DESIGNED FOR EVERY BUSINESS USE ON IBM-PCs™

ENERGRAPHICS™

Dynadisc and its easy-to-use, ENERGRAPHICS is already helping business managers at 75 Fortune 500 companies. ENERGRAPHICS is used in Finance, Marketing, Sales, Advertising, Research and Data Processing. Both VisiCalc and Lotus 123 spreadsheet files interface with ENERGRAPHICS. For the first time business executives can plan, project, present, analyze and report with the best looking professional graphics available on the IBM-PC and compatibles.

VisiCalc is a registered trademark of VisiCorp.
Lotus 123 is a trademark of Lotus Development Corp.

Call 800-325-0774
(except in Missouri)
for our detailed

ENERGRAPHICS brochure

ENERTRONICS

Enertronics Research, Inc.
150 N. Myerbrook • Suite 207 • St. Louis, MO 63105 • (314) 725-5588

Service is the cross
you shouldn't have to bear.

It's the first promise made.

It's the last promise kept.

But today, service may well
be the most important considera-
tion in the computer buying
decision.

It may also be the best
reason to choose Wang.

Wang has more than doubled
its field service and support staff
in the last three years.

Wang has an ongoing, two-
way dialogue with customers to
keep them current and to respond
to their changing needs.

Wang has designed its educa-
tional programs to not only fit
the needs of every company, but to
fit the needs of every person in-
volved in office automation, from
top management to end-user.

In fact, the way Wang looks at
it, the more help we can give our
customers, the more help they'll
get from our computers.

WANG

We put people in front of computers.



NEWS

In OA strategy, technology takes back seat to savvy

Consultant warns planners to use diplomacy when implementing OA

By Charles Robeson
CIW New York Bureau

NEW YORK — Implementing a successful office automation strategy has more to do with credibility and office politics than technology, an office automation consultant told a group of office automation planners at the Information Management Exposition & Conference (Info '84) here recently.

At the end of a two-hour session, N. Dean Meyer, posing as the boss of an office automation planner, figuratively fired several of his listeners for suggesting strategies that got him into trouble without solving business

problems.

Meyer, the originator of a game called Office Automation, in which players try to win with an automation strategy, is the president of N. Dean Meyer and Associates, Inc. of

Ridgefield, Conn. N. Dean Meyer and Associates has been involved in studies of automation implementation efforts at several companies.

Many companies devote weeks to selecting a computer system and re-

Many companies devote weeks to selecting a computer system and related devices without figuring out how they are going to get people to use them or get workers in different departments to use them cooperatively.

lated devices without figuring out how they are going to get people to use them or get workers in different departments to use them cooperatively, Meyer said. Once the effort is perceived as an intrusion on someone's turf or the captive of interoffice rivalries, it is going to encounter obstacles, he added.

Asking for power

Asking for power with which to implement office automation is a mistake, he warned. No matter how much authority an innovator thinks he has been given, he is going up against department heads and vice-presidents who have as much or more power and who have greater savvy in the ways of the organization, Meyer said.

He fired several of his listeners when they requested more power as their next strategic step in effectively implementing OA.

Requesting enough staff to implement office automation is another mistake, he continued. The office automation innovator has to get existing staffs to work with him, and, blasting his own roster will merely arouse jealousies.

Even forming an interdepartmental steering committee too early holds pitfalls, Meyer said. If the automation effort is in an embryonic stage, each department may want to review other departments' ideas, and the effort will get bogged down in bickering, Meyer told the group.

Picking a pilot

One of the keys to a successful strategy is identifying a task that the business needs automated and then finding the right "pilot" to lead the way, he said. A good pilot is an up-and-coming employee in one of the key divisions of the company. He is already looking to automate a basic function or can be persuaded to do so, Meyer said.

Even at this early stage, the office automation group can thwart its own efforts by focusing on technology — which personal computer, word processor, minicomputer or communications devices to buy. Most departments have their own technical experts who are eager for the chance to select the latest technology. Using this resource will tap a source of creative energy for office automation, he said.

An office automation innovator and his staff must have their own technical expertise, but it is not important in the early stages that they investigate technological alternatives. It is not even important to buy only compatible equipment.

What is important, Meyer said, is to get end users involved in putting new equipment to work to solve problems for the business. If they have a say in selecting it, they are more likely to use it.

"An office automation group cannot be an expert on everything. It is a business consultant, diagnosing a business problem and designing a solution," he said. "A wise office automation innovator will try to facilitate solutions, but not control them. By building a reputation as useful, you will gain the support of users groups," he said.



DUNSPLUS: THE MICRO SOLUTION THAT REFLECTS THE WAY YOU DO BUSINESS



You've heard the buzzwords: user friendly, integrated, smarter, faster, cheaper. But when you push the rhetoric aside you're still asking the same question, "Why can't I get a system that solves more problems than it creates?"

You can. It's called DunsPlus and it's built to respond to your information-related business demands without creating demands of its own.

DunsPlus gives the IBM PC XT a built-in business environment. This lets you mold DunsPlus to fit the way you do business.

Within the DunsPlus environment is a software base of the best. Lotus, MultiMate, Western Union electronic mail (to name but a few), are all ready for immediate use. But additional programs to solve your unique problems can also be added with ease.

Instant, yet controlled, access to your choice of mainframes and subscription databases is also a part of the DunsPlus environment. And transferring data throughout the system is as easy as moving a piece of paper from the In Box to the Out Box.

Immediate end-user productivity is not an issue: DunsPlus is a menu-driven system requiring minimal keystrokes for maximum results.

Installation is not an issue: DunsPlus is installed by IBM.

End-user training is not an issue: Training and support are part and parcel of DunsPlus.

Flexibility is not an issue: Any part of the DunsPlus solution—hardware, software, or service—can be tailored to meet your precise business needs.

In fact, there are no issues. DunsPlus does what you want, the way you want it—now.

Designing systems that reflect the way you do business is business as usual for us. NOMAD2, the premier 4th-Generation-Language/DBMS from D&B Computing Services, has made us a leader in the field of information management services. And as your needs evolve, so do we. DunsPlus is just the latest step in translating technological advances into usable business tools—tools that reflect the way you do business.

DUNSPLUS: AN INNOVATION IN END-USER COMPUTING FROM DUN & BRADSTREET

DunsPlus

A Division of
The Dun & Bradstreet Corporation

For further information call: 800-DNB-PLUS. Or drop your business card into an envelope and mail it to DUNSPLUS, 187 Danbury Road, Wilton, CT 06897

Lotus spreadsheet and graphics from Lotus Development Corporation. MultiMate™ word processing from MultiMate International, Inc. IBM is a registered trademark of International Business Machines Corporation. DunsPlus is a trademark of DunsPlus, a company of The Dun & Bradstreet Corporation. NOMAD2 is a trademark of D&B Computing Services.

MAKE YOUR 3705'S PRICE/PERFORMANCE AN ENCORE.

Before you applaud IBM's song and dance for the 3725 Communications Controller, ask with Centron DPL, about your 3705. Chances are good that it will fill your needs at considerable savings for some time to come.

- Add memory up to a full megabyte
- Add as expansion frames to increase the number of lines
- Use additional 3705's to add flexibility to your network
- Flexible lease programs including upgrades of any size at any time



7480 West 78th Street
Minneapolis, MN 55425 • 612/944-9181
Call Toll Free 1-800-522-7337
In the Lower Midwest Call 612/951-8000
In the Southwest Call 254/429-5353



In remote computing services, the time has passed for plain vanilla.



Today's information requirements call for more computing flavors than plain vanilla timeliness. That's why Boeing Computer Services is providing alternatives to our MAINSTREAM[®] telecomputing service.

For example, Boeing now provides you service at fixed cost via our Equivalent Machine option, which simulates a minicomputer environment.

And we have a number of dedicated machine options that let you combine Boeing Systems Software and Service Management expertise with your own hardware, allowing you to concentrate on business, not managing your computers. The result: cost-controlled data processing.

We're offering advanced data base

management systems, too. Like Model 204, FOCUS[®], and other easy-to-use, end user Fourth Generation Languages, which can support large-scale data base processing.

These and other enhanced offerings



from Boeing illustrate our continuing effort to give you all the integrated information services you need. Including distributed processing and micro/mainframe links, office information systems, additional software solutions, education and training, and a variety of professional support services. All designed to let you maintain greatest possible control over your information processing at lowest possible cost.

For more information or the location of the sales office nearest you, call toll-free 1-800-447-4788. Or write BOEING COMPUTER SERVICES, M.S. CV-26-218, 7900 Glades Court, Vienna, VA 22180. The flavor of computing has changed; our dedication to service hasn't.

A Division of
The Boeing Company

BOEING COMPUTER SERVICES

*FOCUS is a registered trademark of Information Builders, Inc. MAINSTREAM is a registered service mark of The Boeing Company.

NEWS

OA gives law firm an edge

By Charles Babcock
On New York Bureau

Law offices are not usually at the leading edge of office automation, but in Boston, the firm of Hale and Dorr thinks automating will give it an edge over its competitors.

John M. Westcott Jr., assistant managing partner of Hale and Dorr, said his firm employs two support people for each of its 200 lawyers. It turned to OA as a way to hold down staff and upgrade support services.

Hale and Dorr decided to automate as much as possible when it realized in the late 1970s that it needed word processing capabilities outside the word processing center. Westcott recently told a session at the Informa-

tion Management Exposition & Conference in New York.

In order to begin automating, the firm started phasing out its IBM System/3 processor and replaced it with two Digital Equipment Corp. VAX-11/750s. It also purchased 26 units from Computer Consolids, Inc. of Rochester, N.Y. A consultant recommended the Computer Consolids Power 630 processors, 88-bit machines based on the Motorola Corp. 68000 microprocessor, because they run the ATAT Unix operating system, which will allow other users and word processors to hook onto the system.

"The younger lawyers were already familiar with micron. They wanted to be in the forefront of the use of computers, and they constantly think of new applications," he said. Older lawyers opposed the automation, in part because of the cost of substituting a new computer system for a functioning one. However, the advantages are now accepted throughout the firm.

Hale and Dorr plans to develop interoffice electronic mail and calendar systems, but, Westcott noted, "Software development is the most disappointing thing." The firm employs two Unix programmers and also contracts out some of its software tasks. In addition, the disk drives "break down too often." When a Computer Consolids unit goes down, lawyers do not have access to certain files.

But the system is allowing the lawyers to shift the daily billing tabulation from their own desks to their secretaries', and the support staff is reacting as if the quality of its work life has been upgraded by the new technology as well, Westcott said.

IIA meet slated for Nov. 11-14

SAN FRANCISCO — "The Information Nation: New Actors, New Factors" will be the theme of the Information Industry Association's (IIA) 16th Annual Conference and Exhibition to be held at the Sheraton Palace Hotel here Nov. 11-14.

The conference will feature more than 36 presentations and discussion groups focusing on the latest in technology, information services and trade trends, IIA said. Among other topics represented will be data base suppliers, videotex producers, broadcast companies, publishers, hardware manufacturers, service companies, financial institutions and advertising and research groups.

Orville Freeman, chairman of Business International Corp., will deliver the conference keynote address. Among the other scheduled speakers are former California Gov. Edmund G. Brown Jr. and Rep. Ed Zechau (R-Calif.). The conference targets chief executive officers, financial directors, strategic planners, research and development personnel and data processing and marketing professionals.

The cost to attend the IIA 16th Annual Conference and Exhibition is \$545 for IIA members and \$745 for nonmembers. Information is available from the IIA, 316 Pennsylvania Ave. S.E., Washington, D.C. 20003.

MOST PEOPLE WHO TRY NOMAD2 BUY IT!



All 4-GL/DBMSs make the same claims as to features and attributes, but you have to look closer to see the difference between NOMAD2 and all the others. It's not only *what* NOMAD2 does. It's *how* it does it. And it's the *how* that leaves the programmer productivity issue in the dust.

As the saying goes, talk is cheap. So rather than just telling you about NOMAD2, we'd rather prove it to you through an application building demonstration, or a trial installation. Further, we invite you to compare NOMAD2 to the products of our leading competitors. And we wouldn't make that suggestion if we weren't fairly certain of the outcome of such a comparison.

Among current NOMAD2 users are some of the largest corporations in America in-

cluding banking institutions, motion picture companies, supermarket chains, oil companies, pharmaceutical firms, insurance companies and major newspapers, to name just a few. And in most cases, NOMAD2 was chosen after head-to-head testing against the leading competitive products.

The products and services of D&B Computing Services have evolved over the years to keep pace with the rapidly changing business environment. And evolution is an essential part of our ongoing commitment to providing quality business tools to help you get more leverage from the way you do business. NOMAD, now NOMAD2, is a product which can help keep you on the right track.

Most people who try NOMAD2 buy it. You owe it to yourself to find out why.

NOMAD2: AN INNOVATION IN END-USER COMPUTING FROM DUN & BRADSTREET

D&B Computing Services

 A subsidiary of
The Dun & Bradstreet Corporation

For more information call: Roger Cox at (203) 752-2511. Or drop your business card into an envelope and mail it to Roger at:
D&B Computing Services, 187 Danbury Road, Wilton, CT 06897

NOMAD is a registered trademark of D&B Computing Services, Inc.

NEWS

Numerical ratings can mislead telecom service buyers

By Phil Vitrone
CIV Washington Bureau

WASHINGTON, D.C. — Companies that evaluate telecommunications system bids "by the numbers" are deluding themselves, according to James Sobczak, communications manager for the Bank of America. He spoke here last week at the annual convention of the North American Telecommunications Association (NATA).

Sobczak was referring to using a numerical rating system to compare the technical capabilities of competing bidders. His point was that both the selection of capabilities to evaluate and the buyer's judgment of how well each bidder satisfies those re-

quirements are subjective processes. Thus, companies that choose numerical rating schemes to avoid subjective influences are fooling themselves, he argued.

Evaluate performance

Sobczak also said a vendor's service performance doesn't depend solely on how quickly the service technician responds to a call for help. How quickly the work is done and whether the vendor lives up to his commitments — particularly whether he meets deadlines — are other factors to consider. Also, because a vendor's quality of service often varies from one geographic area to another, a prospective purchaser

should concentrate on querying the customers of that vendor located in the areas where service will be required.

Besides Sobczak, the NATA seminar included Patricia Paul of Cornell University, Evelyn Olachewski of Massachusetts General Hospital and Thomas McLachlan of Allegheny International, Inc. — all managers of a large communications network.

McManus reported that about 25% of his system's capacity is being resold to outside users. Paul said Cornell is considering reselling long-distance services to its students, while Massachusetts General Hospital, according to Olachewski, is considering a long-distance resale plan for its pa-

tients. The latter two speakers said their interest in resale was triggered by a growing cost squeeze — their budgets are rising, but not as fast as charges for communications services.

Another result of this cost squeeze is an increased interest in sharing arrangements, Paul said. By joining with a number of other colleges and universities, Cornell has been able to purchase IBM Personal Computers at a hefty discount, she said. Cornell may get together with other schools to provide what she called "bypass on a grander scale" — a private, long-distance network that would supplant individually priced toll and private-line facilities.

AI talk to open Educom meet

PRINCETON, N.J. — Edward Feigenbaum, professor of Computer Science at Stanford University in Stanford, Calif., will deliver a keynote address on artificial intelligence at Educom's 20th anniversary conference Oct. 30-Nov. 2 at the Hyatt Regency Hotel in Cambridge, Mass.

Hosted by Boston University, MIT and Harvard University, the conference will provide an opportunity for college and university administrators and faculty to learn about developments in information technology for higher education.

Several area companies, including Data General Corp.; Digital Equipment Corp.; Honeywell, Inc.; IBM; Prime Computer, Inc.; and Wang Laboratories, Inc., have arranged for tours and demonstrations in their laboratory and manufacturing areas. Technology tutorials and demonstrations will be held at the hotel.

Registration for the program is \$225 for member institutions applying before Oct. 5, and \$325 for non-members. After Oct. 5, registration is \$275 for members and \$375 for non-members. Educom, P.O. Box 364, Princeton, N.J. 08540.

Ingres DBMS users to meet

BERKELEY, Calif. — The fall meeting for users of Relational Technology, Inc.'s Ingres data base management system (DBMS) will be held Oct. 20-21 at the New Orleans Fairmont Hotel in New Orleans.

Speakers will include Chris Date, an independent consultant specializing in relational data base technology. Date will address "Relational DBMS — Myths and Misconceptions."

User presentations, information exchange sessions and Ingres classes will be conducted at the meeting. Pre-registration is \$195 per person, and \$165 for each additional attendee from the same organization.

Relational Technology, 2865 Telegraph Ave., Berkeley, Calif. 94705.

Bye Bye, Computerease.

Invisible within every computer is a critical link between the hardware and the job you need done. It's called the operating system. Essentially, it's what controls the operation of a computer and its peripherals. It determines how competently, how quickly and how easily your system will do its job.

Yet, of the operating

systems, only one has been created specifically to improve and simplify business data handling.

Only one.

The Pick Operating System.

Developed by Dick Pick and refined over the past 20 years, it is far and away the most powerful, flexible and efficient multi-user operating system for business. Integral to the system is a data base management system so advanced that it offers you simultaneous access and updating of the same files — a capability similar to an airline reservations system.

It Understands English Fluently.

To begin with, it lets you people work in the language they know best. Plain English.

So you and your people have the capacity to organize, utilize,

and analyze data more easily and productively than ever before.

With the Pick System's dictionary file structure and built-in relational data base, information can be retrieved in a way that's not only more efficient, but simpler as well. You can use your own words to get the information you want. Which makes report generation and data retrieval as easy as punching in a key phrase.

It Makes Obsolescence Obsolete.

The Pick System is genuinely transportable, so you're not married to any particular hardware or manufacturer. Which means that software that runs on a mini will run on a micro or mainframe, with no reprogramming. And if you do change hardware, you won't have to convert all of your data files. Or throw out your investment in applications software. It'll work on any other Pick equipped system in a snap. And applications software is available now for virtually any business management requirement.

With Pick Power,
The IBM® PC-XT
Outdoes Itself.

The IBM PC-XT was created as a single user PC. Pick can help



NEWS

Explosive corporate micro growth eliciting innovation

By Dennis Richmond
ON Staff

BOSTON — Corporate microcomputers are in a stage of explosive growth, and the organizational user is causing innovation in software, hardware and micro-mainframe communications.

So said Paul Puzanghera, product manager for microcomputer products of Management Decisions Systems, Inc., at MDG's Express Users Group Third Annual International Conference here recently.

Systems developed for large computers are moving toward the micro arena and are being designed for end-user ease, Puzanghera said, adding that micro products are incorporat-

It is not enough to have the micro and mainframe physically connected. . . You are confronted by a series of choices, and they really are dichotomies in your architectural decisions.

— Paul Puzanghera, product manager for microcomputer products of Management Decisions Systems, Inc.

ing mainframe communications and more power.

Puzanghera outlined current microcomputer developments and trends that reflect the corporate user's needs. Microcomputer hardware is moving toward 32-bit processors,

and Winchester-type, half-height disk drives are getting smaller in size but are increasing their data storage capacity, Puzanghera said. The Intel Corp. 8286 processor has hardware support for virtual memory, which means more data can be moved in and

out of core more quickly, he added.

Workstation manufacturers have carved a large niche for themselves, especially in places where workers are autonomous but using shared data, such as in computer-aided design and manufacturing applications for engineers, he said. "Graphics is like the fun house maze," Puzanghera said. "Every time you turn around you hit another wall." Output technology and graphics languages improvements are more likely to occur in the next year than any one great graphics innovation, he said.

Users want fast, cheap, color, quiet printers, and this year, he said, Hewlett-Packard Co. is taking a "tremendous step forward" with its new laser jet printer.

Microsoft Corp.'s MS-DOS operating system, which is resident on 95% of micros, is fine for single-user machines, Puzanghera said, but corporate users have had to add operating environments like IBM's Topview, Microsoft's Windows and VisiCorp's Vist On to compensate for weaknesses in the operating system.

AT&T's Unix-type operating systems do speak to corporate computing needs, he said, and Puzanghera predicted that there will be a merging of Unix and DOS technologies in the next few years.

Spreadsheet, data base and desktop methods of using data each have a role, but none is appropriate for every corporate need, he said.

Unified access methods

Related to these methods are a variety of useful access modes, Puzanghera said. Mouses and touch screens allow users to "point and pick," and corporate users can access and manipulate data through commands, menus and forms, he said.

Natural language, which is in its infancy stage but has promise for the future, permits nontechnical people to use simple English phrases to do their computing.

It is not enough to have the micro and mainframe physically connected, Puzanghera said. "You are confronted by a series of choices, and they really are dichotomies in your architectural decisions," he added.

Designers for micro-to-mainframe links should think about where the corporation sits on issues such as bi-synchronous or asynchronous communications, star vs. ring networking, traditional orientation vs. a local area network, separate automation vs. integrated automation and the tools approach vs. the data base approach, he said.

"The [decision support system] data base is where you must put your effort," Puzanghera said. All information should be collected to provide central access to data, security, dictionary capabilities and auditability, which will provide much more benefit than each individual data base, he said.

Hello, Computer Ease.



it be a lot more. With the very first multi-user, multi-tasking operating system for the popular star in the IBM line. A system you can grow into, not out of.

Our PCXT software transforms it into a more powerful, more cost effective three user system. By adding two terminals, it allows three users to simultaneously operate the system. And it means applications software and data can migrate from micro to mainframe, from the PCXT through Series/1 up to the IBM 4300. It'll even let you share the hard disk with as many as three other operating systems and their specific applications

software. But that's not all.

Pick Increases A Business Computer's Maximum Potential.

It begins with the world's most advanced hardware independent virtual memory system. With it, programs and relevant information are shuttled into and out of main memory on demand, as needed, accelerating the rate at which tasks can be executed. Moreover, with its unique variable length file structure, a disk accommodates more business data. And because Pick is a multi-user, multi-tasking system, concurrent operations can be in process on the same system with the same data base.

In short, any business

computer's power and performance are dramatically enhanced.

Pick Wins, Pick Picks.

Before you consider a new or expanded computer system, you owe it to yourself to look into the operating system that'll orchestrate it best. Chances are you'll select the one companies large and small are using today—from Anheuser-Busch, CBS and McDonalds, to Vallejo General Hospital and Cominuts, Inc. The one that offers you unprecedented efficiency for business data management.

The Pick System. Because when you replace computerese with computer ease, there's no mystery to computer mastery.

The Pick System.

Computer Ease, Not Computerese.

For more information, call us toll-free at 1-800-FOR-PICK.
In California, call 1-714-261-7425.

Dealer Inquiries Welcome.

The Pick Operating System is available on three computers: IBM PCXT (Pick), IBM GS-9000 (Systems Management Inc.), IBM Series/1 (CCI Information Systems, Inc.), IBM 4300 (Systems Management Inc.), HP 3000 (Automatic Data Processing, Inc.), Datacube 852, Alter 546, Zetron Pick (General Automation, Inc.), Salus (Parker Computer Corp.), Mentor (NCR Applied Data Systems), Wicat (Wicat Computer of Australia), Tau (Tau Engineering, Inc., Japan), CIE Systems (CIE Tech of Japan), Chems Computers.

PICK is a trademark of Pick Systems, Inc., California. © IBM Pick System



NEWS

Local-area net improves Swiss school's DP resources

LAUSANNE, Switzerland — For the telecommunications group at the Swiss Federal Institute of Technology here, implementing a local-area network was critical for its intended expansion to an additional campus.

"In an academic environment, it's important to be able to give students and researchers the information they need and to make it available from their own workstations," explained Philippe Perret, a telecommunications engineer at the institute's DP department.

The telecommunications group undertook a search for a local-area network that would allow hardware from various vendors to share common resources. The group evaluated

a number of products and even visited several vendors in the U.S.

In 1983, the institute selected a test local-area communications system, Net/One from Ungermann-Bass, Inc. of Santa Clara, Calif. The system included seven network interface units, each of which permitted the attachment of up to 24 devices.

Because the institute was in the process of expanding its campus to include a new location about three miles away, the telecommunications group was also interested in eliminating the miles of copper cable and outdated switching equipment that had previously been used to move data in and out of the various computing resources on the campus.

"Before the first Net/One installation, we had racks of modems and hundreds of pounds of copper wire running to a central switching facility," Perret explained. Switching was sometimes done manually with patch panels located at different sites at both campuses. According to Perret, installation of the Net/One local-area network eliminated most of the need for such of this equipment.

The institute's first Net/One was used to interconnect a Control Data Corp. 170/780 mainframe, a number of Digital Equipment Corp. VAX-11/780s located at different points around the campus and numerous terminals and peripheral devices. Prior to the installation of Net/One,

computer equipment was primarily connected in a classical star configuration. Outside services were accessed via Switzerland's Postal Telephone and Telegraph Agency telephone network using low-speed modems and the university's private automatic exchange.

Early in the planning stage for the extended local-area network, the telecommunications group decided to use a hierarchical network topology to interconnect all the departments at the new campus. This was accomplished by employing a register-enhanced baseband Net/One system as a backbone network to link computers and peripherals attached to separate departmental networks.

"Networks at the new campus can best be viewed not as monolithic systems, but as a series of connected spurs attached to the baseband backbone network," Perret explained.

The need to support a wide variety of computer equipment was further illustrated by an equipment update that was planned to coincide with the expansion to the new campus. "The data processing department was changing from a CDC 170/730 to a new CDC 170/865 mainframe, so we had to make sure that the [local-area network] would work with the new equipment," Perret said.

With Net/One, Perret added, users can program at a number of system architectural levels, allowing students and faculty members to interconnect unique equipment such as personal computer workstations, high-speed laser printers and graphics devices.

High level of DP sophistication

The institute, with a computer user population of about 2,100 students and 700 faculty and staff members, feels that a simpler communications infrastructure is one of the most important benefits it has gained from its Net/One. The result is a high level of data processing sophistication among students and faculty members who have worked with Net/One, according to Perret. "Today we have a number of students who are very knowledgeable about local networking, both from a hardware and a software standpoint. It's becoming a learning tool," he said.

Simon Waddell, director of telecommunications at the institute, recalls tougher times for Net/One. In general, opposing faculty members thought the DP center was too bureaucratic. Attempts by the DP staff to install a communications system that touched all of the departments were seen as yet another attempt to interfere in the way individual departments were being run.

"We found out very quickly that the quickest way to overcome these objections was through professional education. We pointed out that local-area networks bring down system-wide interconnection costs and drastically improve shared information," Waddell said.

"By [allowing] students and researchers [to] get information they needed to complete their research from a single workstation, we were able to show how a local-area communications system could improve the use of our institution's data processing resources," concluded the telecommunications director.

The four most important days of the new year for telecommunications users!

START "THE YEAR AFTER DIVESTITURE" OFF RIGHT — WITH COMMUNICATION NETWORKS '85.

This is it — America's national telecommunications forum — the first, the most comprehensive and the most important conference and exposition of the year. It's the Seventh Annual COMMUNICATION NETWORKS Conference & Exposition.

- the largest conference program in the industry — some 80 essential seminars, topics and presentations
- the leading industry experts, including the renowned James Martin, Arch McGill, FCC Commissioner Dennis Patrick, and some 200 other speakers and panelists
- the largest exhibit in COMMUNICATION NETWORKS history, with over 200 exhibitors and 750 booths, so you can see everything the technology leaders have to offer in '85.

BEGINNING AND EXPERIENCED TELECOM PROFESSIONALS WILL BENEFIT

Whether you or your staff have been in the telecommunications

field for one year or ten, you'll find COMMUNICATION NETWORKS '85 of major value. In fact, what you learn here will have a significant



impact on how effectively you deal with the constant changes in telecommunications in 1985.

Attend any of the 12 introductory or advanced seminars on Monday, January 28 and, as a special bonus, you'll hear the dynamic James Martin at a special late afternoon lecture. Then choose from more than 70 conference sessions, including user-oriented topics chaired by Association of Data Communications Users members. See the latest products and services on exhibit, relax in exhibitor hospitality suites and enjoy all the attractions of Washington, D.C.

REGISTER BY DECEMBER 14, 1984 AND SAVE \$50 ON EACH REGISTRATION.

Don't let anyone who knows miss out on 1985's most important telecommunications event. Come for all four days, or on any days you prefer, to the largest and best COMMUNICATION NETWORKS Conference ever. Register for three or four days by December 14, 1984 and save \$50 on each registration.

CALL TODAY, OR SEND THE COUPON BELOW TO REGISTER.

800-225-4698
In Mass., 617-877-0700

☐ Sign me up for COMMUNICATION NETWORKS '85

- ☐ as follows:
 - ☐ Monday Seminar (includes lunch)
 - ☐ Monday Plus 3-Day Conference & Expo (includes luncheon)
 - ☐ 3-Day Conference & Expo only (includes luncheon)
 - ☐ 4-Day Conference & Expo (includes lunch) (check one)

☐ Payment Enclosed ☐ Bill Me ☐ Bill Company P.O. #
 Charge my: ☐ American Express ☐ VISA ☐ MasterCard Exp. Date: _____
 Signature: _____
 Name/Title: _____
 Company: _____
 Address: _____
 City, State, Zip: _____ Phone: () _____

Bates	After
Dec. 14	Dec. 14
\$295.00	\$245.00
\$895.00	\$845.00
\$395.00	\$345.00
\$195.00	\$145.00

COMMUNICATION NETWORKS
CONFERENCE & EXPOSITION
Washington Convention Center,
Washington, D.C., January 29-31, 1985.

Complete seminar information will be forwarded when available. Registrations considered later than Jan. 18 are subject to a \$50.00 service charge. Registration may be transferred at no charge.

MAIL COUPON TO:
COMMUNICATION NETWORKS '85,
Box 808, Framingham, MA 01701 USA



COMPAQ PRESENTS

How To Do More With Less

It used to be that when you wanted personal computers to do more, you added peripherals. A fixed disk for storage. A second monitor for graphics. A backup system for data protection. And slowly the octopus devoured your desk.

But now everything you wanted in a personal computer is in a computer. The new COMPAQ DESKPRO™ is here.

There's room *inside* for up to four storage devices. For instance, you could insert two diskette drives, a 10-megabyte fixed disk drive, even an exclusive tape backup system. The new COMPAQ DESKPRO can grow *inside* instead of *out*, saving your desktop.

Plus internal expansion slots will let you add even more functions like local area networking. A mouse. And more.

All that makes COMPAQ DESKPRO the most expandable PC you can buy. And thanks to some ingenious engineering, the COMPAQ DESKPRO displays high-resolution text and graphics on one monitor, not two.

It also runs thousands of business programs made for the IBM® PC and XT straight off the shelf—a full two to three times faster than older, slower computers.

So you can run the most complex software this side of mainframes quicker than you can say, “1-2-3.”

We designed the new COMPAQ DESKPRO around the same philosophy that made us the best-selling portable business computer in the world. We simply offer more in less space. For a free brochure or the location of your nearest Authorized COMPAQ® Dealer, call toll-free 1-800-231-0900.

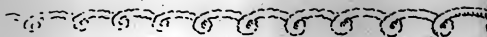


It simply works better

COMPAQ
DESKPRO

COMPAQ® is a registered trademark and COMPAQ DESKPRO™ is a trademark of COMPAQ Computer Corporation. IBM® is a registered trademark of International Business Machines Corporation. © 1984 COMPAQ Computer Corporation.

NOW IT ONLY TAKES ONE TO TANGO.



Introducing PhoneMail,[™] another unbeatable system from ROLM.

Say hello to the One Party Phone Call. No more waiting for the phone to ring, waiting for someone on the other end to appear, waiting for your telephone partner in another city, another meeting, another time zone. Waiting.

PhoneMail is a fully-integrated voice-

messaging system for your entire company that you can access from any touch tone[™] telephone anywhere in the world, any time.

PhoneMail can answer your phone with your personal greeting. (If you'd prefer, your secretary can take the call and direct the caller to PhoneMail.) Then, because PhoneMail is part of an integrated computer-controlled business communication system, it really

Touch Tone is a trademark of AT&T



begins to separate itself from those single phone answering gadgets.

PhoneMail will let you answer messages automatically. It can forward them, along with your comments, to dozens of your associates. Its voice prompts guide you step by step. There's no chance for miscommunication. Problems are solved. Decisions are moved along.

Of course, only ROLM has PhoneMail.

That's not surprising. We're the people who taught telephones and computers and people how to work together. We can show you the most advanced ways to manage voice and data today, next year and into the next century.

If your business phone system has you talking to yourself, it's time to talk to ROLM.

ROLM

NEWS

Bank keeps tabs on data with mainframe security tool

SALT LAKE CITY — After 12 years, a bank here achieved the kind of flexible security control it needed to support its programming and on-line operations with the help of a mainframe security package.

Headquartered here, First Security Bank has more than 5,100 employees and some \$6 billion in assets. The bank maintains a data center equipped with IBM 3033 and 3063 mainframes, a Hewlett-Packard Co. HP 3000/68 for remote job entry and 2,000 terminals in 160 branch office locations.

According to Security Administrator Gerald Jensen, First Security's search for the best method of controlling data and system security began

"We were able to build common data sets so programmers on an application team could pass or use common files."

— Gerald Jensen, security administrator at First Security Bank

nearly 12 years ago. "Back then, when we started to look for security software, our only option was to write a system ourselves. Only companies with a large staff of programmers had the resources to do that, however."

"At that time," Jensen continued, "we only had about 25 programmers.

So, to satisfy our needs and those of the DP auditors, we used some internally written security modules and the security that the installed IBM CICS facility provided."

Jensen said that First Security's need for a flexible and comprehensive security system grew as the computer center staff expanded to 245

employees and the center began to offer on-line processing capabilities to the 2,000 terminals. In addition, the company began marketing third-party automatic teller machines and credit card services that required confidentiality and increased data security.

According to Jensen, First Security needed a package that adapted to the company's procedures and routines. "We have 100 different situations for setting up security because every branch functions differently. In a larger branch, for example, an officer may only have administrative responsibilities. But in a smaller branch, the officer may do administrative work and data entry, as well as process loans."

Jensen and an evaluation committee reviewed the packaged security software available for the data center's hardware. What they finally selected was CGA Software Products Group, Inc.'s Top Secret package. Jensen said Top Secret used IBM's standard security interfaces and, therefore, required no programming modifications to the data center's IBM MVS operating system.

Overhead lower

Jensen also said that Top Secret's overhead was lower than the other security software reviewed because it ran on one disk I/O per job. The package, he said, operates by reading the security record of the user into a user's address space and then performing the verifications, thus eliminating redundant tasks.

According to Jensen, First Security began implementation of the security software by "defining" programmers and operations personnel to Top Secret. A list of resources that each individual needed to perform a job was used to create each person's security profile. Users were asked to help define their own needs, resources and limits. That user participation, he said, eased the implementation process.

"We were able to build common data sets so programmers on an application team could pass or use common files," Jensen said. "Libraries or data set names that each programmer needed were included in a team profile. While departmental and divisional profiles were used for groups with homogeneous usage of computer resources, Top Secret also recognized the need for individual profiles for some employees."

More secure applications

As a result of Top Secret's implementation, Jensen said, applications at First Security are now more secure.

"In some instances in the past, within the finite levels of CICS security, some security levels covered as many as three applications. That meant that users could inquire on more than one application. With Top Secret's infinite number of profiles, we were able to build profiles for each application and employee job function in programming, computer operations and all branch-associated functions."

"That gave us better control over who could use or get to any of our computer resources. That is, after all, what comprehensive data security is all about," he said.

UNIX & C

MANY UNIX-BASED SYSTEMS ONE UNIX TRAINING COMPANY

The Computer Technology Group provides the UNIX training solution. Training to fit the complexities of your UNIX-based system.

Three factors make the Computer Technology Group the experts in UNIX and C language training:

- Experience, through training thousands of students worldwide in live seminars, with thousands more using our video training at their own locations.
- Extensive Curriculum Supporting All UNIX Versions, creating a client base of manufacturers, software developers and end users.
- Quality of Instruction, with instructors and course developers who are experts in teaching UNIX and C, as well as in designing and implementing a variety of UNIX-based systems.

ONE UNIX TRAINING COMPANY MULTIPLE DELIVERY SYSTEMS

Whether you're training two, 200, 2000... you can select the most efficient and economical training solution for your unique environment.

- Public Seminars offered in major cities throughout the world.
- On-Site Seminars for training customized to your system and to specific groups within your organization.
- Video-Based Training for consistent training that is always available at your location.
- Interactive Videotape Training, which dynamically tailors courses to the individual—from novice to expert programmer.

ASK FOR OUR 48-PAGE COURSE CATALOG, WHICH PROVIDES:

- Comprehensive course outlines
- Course prerequisites
- Curriculum recommendation for multiple audiences
- Guidelines for cost-effective training media selection
- Current seminar schedule

CALL (800) 323-UNIX or
(312) 967-4052 in Illinois

*UNIX is a trademark of Bell Laboratories.

**COMPUTER
TECHNOLOGY
GROUP**

Telemedia, Inc.

310 S. Michigan Ave., Chicago, IL 60604

NEWS

UPS weatherproofs production

—MIAMI—Thunderstorms in southern Florida do more than scare away tourists. At the Levitt Furniture Corp. headquarters here, storms throw the computer system intermittently into chaos.

The resulting disk difficulties, loss of personnel time and disruption of staff activities multiplied the power problems into huge losses. It would often take two to three hours for data processing personnel to backtrack through the disrupted data and get the numbers back into their original condition.

"When the system went down, our people would just sit tight and wait it out since their entire job function revolved around the computer system," said Ken Leonard, special projects manager at Levitt's Communications and Network Systems Division. "It was a total wipeout in terms of nonproductive time that the company had to pay for in salaries."

Communications hardware

Levitt's communications center hardware consisted of an IBM System/38, several IBM Series 1 front-end processors and associated communications gear, including modems and a bank of auto-dialers that interface with the System/38. The network functions in both real-time and dedicated-time modes and links the home office system to 72 branches and six group offices in the U.S.

In addition, IBM System/34s at Levitt's corporate facility channel daily communications with the branch offices to keep the home front up-to-date on sales and inventory and to expedite information to the company's field locations.

Levitt's managers decided to support the system with a Clary Corp. uninterruptible power supply (UPS) system as a backup for power abnormalities. It backs up the 110V wall receptacles for the CRTs and the emergency lights in the computer room.

The Clary model in place is a three-phase, 30 kVA UPS system supplied with a standby 120V dc battery plant that provides emergency power. Levitt chose the Clary model because it was quiet and small enough to be placed in the computer room. The UPS system uses sealed batteries so there is no gas disbursement, and consequently, no fans or ventilation are needed.

Downtime minimized

Since the unit's installation in November 1982 until recently, "we hadn't had any processing downtime due to power failure," Leonard observed.

Recently, however, one component of the UPS was in-

self knocked out by lightning, and the unit's static bypass switch stopped functioning, Leonard said. A service agency replaced the part. When Leonard brought up the computers, they crashed again because the replacement was faulty. The faulty part was replaced, and the system was fixed. Prompt service is not

easy, Leonard said, because the only agency qualified to work on their power supply is located in central Florida.

Even so, Leonard said, "Our credibility and data availability have improved dramatically. The unit paid its way after only a few hours during the first few thunderstorms following its installation."

YOUR TEXAS INSTRUMENTS SOURCE

SALES • SERVICE • LEASING



One-Year Lease Price

Model 855	
Model 703/707 Portable Terminal	\$5.00
Model 815 PC Workstation at the Industry	\$5.00
Model 832 PC/ASR	\$5.00
Model 850/855 Draft & Letter Quality Professional Computer—Desk Top & Portable	\$7.00

800-251-1127 214-495-0000 214-491-0000
 321-271-2000 214-477-0000 800-548-7300
 335-450-0300 321-325-7300 321-421-0000

WESTWOOD COMPUTER CORPORATION

Our newest, most advanced bar code readers give you more. For less.



Limited time offer.
Scan a SCANSTAR
and save \$175!

The SCANSTARS™

In minutes, the SCANSTARS turn your IBM terminal, PC or a compatible terminal into a bar code workstation. Installation is quick. Easy. And doesn't interfere with your normal operation.

The SCANSTARS incorporate the most advanced bar code scanning technology. They scan, decode and emulate IBM PC and IBM 3178, 3278, 3251 and 5251 keyboard functions, as well as Courier/2700 and Decision Data 3751 terminals.

Ruik tough to last in the factory or the office, yet compact and self-contained in a single housing, the SCANSTARS read bar codes using a stainless steel or aluminum light pen, or a hand-held laser scanner.

Additional SCANSTAR features include: The ability to auto distinguish among standard industry codes such as 3 of 9, Codabar, Interleaved 2 of 5, UPCA/EAN, or 128. An auxiliary asynchronous serial ASCII input port. A volume control for audio acknowledgement. An earphone jack for high noise environments. And five status LEDs.

And now we'd like to introduce you to the best feature of all: For a limited time, you can save \$175 on the regular SCANSTAR price of \$1,100 which includes a reader, decoder and an aluminum ruby-tip pen. Just \$925 for the most advanced, compatible bar code readers you can buy. To qualify for our special offer, simply return your purchase order with the coupon below.

The SCANSTARS. New and part of a galaxy of scanning products from Computer Identities.

Please send confirmation of my order (P.O. enclosed) ☐ or more information on the SCANSTARS, along with the name of my Computer Identities distributor ☐.

Name _____ Title _____
 Company _____ Phone _____
 Address _____
 City _____ State _____ Zip _____

Type/No. of terminals: IBM 3178 ☐ IBM 3278 ☐
 IBM 3179 ☐ IBM 3279 ☐ Courier 2700 ☐
 Decision Data 3751 ☐ Number of IBM PCs _____

Please attach sample of your bar code labels. Offer applies only to orders placed for products with 1204 delivery date.

computer identities

5 Shawmut Road, Canton, MA 02021
 Tel. (617) 825-0830 • TWX 750-548-0834

NEWS

Medical practice regroup, trades mainframe for mini

EL PASO, Texas — When El Paso Medical Surgical Associates reorganized last year, the five-physician internal medicine and cardiology practice here began searching for a new computer system to replace its Burroughs Corp. mainframe.

The medical facility wanted a smaller rather than a larger system because the practice decided to provide only clinical services instead of both clinical and hospital-based services, greatly reducing its DP and file storage requirements.

"With the improvements in computer technology that accompanied the advent of microcomputers, we at first thought our needs could be met by small minis," said administrator Dr. John. But he quickly discovered that few manufacturers could supply the multitasking, multiuser capabilities he required.

"At that point we weren't certain what type of hardware we needed, so we sat down and defined our system requirements," John said.

El Paso Medical Surgical

wanted a system that could adapt to its current six-digit method of maintaining patient accounts and provide aging of accounts receivable by insurance carrier.

Money savers

Other requirements included appointment scheduling and data mailers that would save the facility money when it sent out its statements.

With the requirements defined, the Associates looked at 40 packages and visited 10 manufacturers. When the search was completed, John had chosen Medic, a software package from Computer Information Architects, Inc. in Lubbock, Texas.

Medic features a number of facilities, including billing, posting of revenue, billing summaries and aging receivables by doctor and department, diagnosis, appointment scheduling, insurance billing and daily schedules for each doctor.

General business applications were also included, such as accounts payable, payroll, word processing and spreadsheet.

The hardware selected consisted of a Texas Instruments, Inc. Business System 372 minicomputer with four TI Model 801 terminals, 43M bytes of mass storage, two TI Model 810 dot matrix printers and one TI Model 855 dot matrix, letter-quality printer. The complete system costs \$40,000.

Because the clinic's previous system did not have insurance information, John said the task of keying in information on the clinic's 6,000 accounts demanded a lot of up-front work. All the proper insurance information was keyed in manually, which required three months.

Accurate patient data

A major system benefit is accurate patient information, John said. When a patient visits the facility, a clerk assigns the patient a number if he is not registered. Historical and insurance information are entered on the TI system, and the patient's number is entered into the appointment schedule. The patient's name also appears on the doctor's personal schedule. After the visit, the doctor fills out a fee ticket. Fee tickets are entered onto the system at the end of

the day and automatically charged to the appropriate patient's account. Insurance billing is automatic.

John said he believes that automatic billing has prevented the hiring of additional staff. "We had not printed insurance claims automatically before," he maintained. "We had to enter data manually from the bill. The automatic billing on the Medic systems saves a lot of time. If we were still billing manually, we would probably need two or three more clerical people."

"With the system, ap-

pointment scheduling has become much easier, too," John noted. "The appointment scheduling on our old system was just a nightmare."

The only problems John said he encountered with the system were a few software bugs that the vendor fixed — a hard disk that went down and the system's documentation. "The documentation seems geared to a medical professional rather than any end user," John said. "I am a certified public accountant, and I had a few problems understanding how the system worked."

How to Enter Data Into Your Computer 20 Times Faster

FORMSREADER™

Why let manual input slow your information processing? The new FormsReader™ OCR/minicomputer data entry system inputs typed and handwritten data fast and automatically...without retyping it electronically "reads" it...writes and inputs data directly from all types of hard copy forms. Because it's fast, it's ideal for time-sensitive data such as time billing, personnel records, survey forms, payroll documents, order entry, accounting forms and many more.

If you enter data from 200 forms a day FormsReader could save you time and money.

FormsReader™ is easy to install, easy to use and compatible with most DTP and D.O.P. systems. For more details contact:

computer

1700 Madison Road • Building #2
Portland, Maine 04106
207-575-0700 • Telex 2000 630-0000

*The appropriate FormsReader model must be used. See the following suggested hardware combinations: Computer: Texas Instruments, Inc. Business System 372 minicomputer, 43M bytes of mass storage, two TI Model 810 dot matrix printers and one TI Model 855 dot matrix, letter-quality printer. The complete system costs \$40,000. Because the clinic's previous system did not have insurance information, John said the task of keying in information on the clinic's 6,000 accounts demanded a lot of up-front work. All the proper insurance information was keyed in manually, which required three months.

CHUBB INSTITUTE DP TRAINING

PUBLIC COURSE SCHEDULE

OS/VS Job Control Language	Mar. 18-20	New Jersey
Nov. 25-30	Mar. 18-20	New York City
TSO/VS/VS	Feb. 18-21	New Jersey
OS/VS Linkage Concepts & Coding	Feb. 25-26	New Jersey
OS/VS Utilities/IDCAMS	Feb. 27-28	New Jersey
OS/VS Dump Debugging	Nov. 7-9	New Jersey
VSAM in COBOL	Nov. 12-14	New Jersey
ANS COBOL	Dec. 3-14	New Jersey
OS/VS Assembly	Mar. 15-29	New Jersey
Data Processing for the Non-DP Manager	Nov. 12-14	New Jersey

10% discount for three or more attendees in the same course.

Please write for enrollment or fee catalog.

CHUBB INSTITUTE FOR
COMPUTER TECHNOLOGY
8 Sydenham Way
Parsippany, N.J. 07054
(201) 285-9700

DEC → TO IBM/SNA

Full SNA capability for your DEC computer Comboard™/SNA gives your terminals access to IBM interactive applications. Data can be transferred between systems, all in the completely fully supported package. Comboard/SNA from Software Results.

Proven and reliable, Comboard/SNA is a single-board 256kb communications computer that plugs into your DEC Unibus. Teamed with Comboard software the system is a cost-effective solution to troublesome SNA communications problems.

Your DEC emulates on IBM PU Type 2 communication node. You have a full gateway into your SNA without passing through a secondary network.

For further information call or write Software Results... the leader in DEC to IBM communications.

COMBOARD

Communications Results from
**SOFTWARE
RESULTS
CORPORATION**

1-800-SRC-DATA
(1-800-775-2882)
In Ohio call (216) 474-8700

2887 Silver Drive Columbus, Ohio 43211 Telex 407-405 SRC DATA CT



The IBM Instructional Systems

Now you can have a comprehensive training system with IBM host and PC compatibility.

Computer-Based Training (CBT) can be cost-effective, convenient and adaptable to the pace at which your students learn. And by helping to improve your employees' skills, CBT can also improve your profitability.

Now IBM offers you training software with the features you've been waiting for.

Compatible IBM Personal Computer-based and host-based systems.

Tailor your CBT system for either a centralized or stand-alone environment. IBM's new Personal Computer Instructional System (PCIS)* works with our host-based Interactive Instructional Systems. So courses written on the IBM PC can be presented on host terminals—and vice versa—giving the flexibility you need for quality training.

Powerful authoring systems.

These systems let your course creators use authoring "levels" according to their experience, so they can be more productive. Menus, hints, quizzes and graphics can be included for better interest and clarity.

Advanced functions for better student performance.

Features like pretests and student branching let your system adapt to students' abilities. And you can create simulations to let

students practice realistic situations.

Also, the administration systems for the PC and host computer let you easily monitor the quality of training, use of the system and progress of each student.

A growing list of courseware.

Whether you're just starting or expanding your system, you can choose from a variety of prepackaged courseware available from IBM or other vendors.

Profit from IBM experience and support.

You can depend on IBM for quality support. After all, we've been providing instructional systems for over 20 years.

You can order or learn more about IBM Instructional Systems by calling 1 800 IBM-2468, Ext. 90, and asking for the Software Department. Or return the coupon.



IBM Direct
Software Dept. 3390
1 Colton Road
Dayton, NJ 08810

IBM Instructional Systems

☐ Please send me information on the IBM Instructional Systems.

Name _____

Title _____

Company _____

Address _____

City _____

State _____

Zip _____

Phone _____

18-15

*Developed for IBM by Computer Systems Research, Inc.

NEWS

Drug firm seeks faster FDA approval with DBMS

CEDAR KNOLLS, N.J. — In the pharmaceutical industry, the name of the game is getting new drugs through the federal Food and Drug Administration (FDA) approval process as quickly as possible.

Berlex Laboratories, Inc., an American subsidiary of Schering A.G. of West Germany, plans to speed up its FDA New Drug Application (NDA) submissions program by using a relational database management system (DBMS) designed for information analysis and researchers in business, industry and government.

According to Joseph Buonomo, a statistical software specialist and project leader for clinical data base development at Berlex, the company plans to submit several NDAs in the coming year. "Sir/DBMS is one of the keys that will enable us to get a huge volume of work done, considering the relatively small staff — about 18 people — that we have. The projects we have begun are on target, and the prospects are very promising," Sir/DBMS is a product of Evanston, Ill.-based Sir, Inc.

Indispensable as a DBMS

Before Berlex brought in the Sir/DBMS package in May of this year, much of the NDA work was done with SAS Institute, Inc.'s SAS statistical package. "Although SAS provided us with excellent statistical analysis capabilities, it was inadequate as a DBMS," Buonomo said.

"Too much programming was required. Data editing and updating were particularly inefficient and difficult to manage. Also, at that time SAS was only available on large IBM machines, such as the IBM 3081. Berlex used through a commercial time-sharing service. Our group didn't have any control over its computing environment."

When Berlex began looking for a DBMS to complement the SAS statistical package, it found that

Sir/DBMS had all the features it needed. Among the features Berlex found attractive, Buonomo said, were its SQL+ relational query component, similar to IBM's structured query language, and its ability to export data directly for use with SAS.

He also noted "the direct binary file creation of a Bio-Mathematical Data Processing (BMDP) Save File was excellent because you can also do very sophisticated analysis with BMDP, a package developed by UCLA (University of California at Los Angeles). In addition, the fact that Sir/DBMS supported a variety of data views — relational, hierarchical and network — was most important for us."

Portability important

Portability was also an important consideration for Berlex. Sir/DBMS runs on more than 20 different computers and operating systems ranging from supermicrocomputers to mainframes. "Our parent shop in West Germany uses Sperry Corp. computers," Buonomo said. "We have both an IBM 4331 and a Digital Equipment Corp. VAX-11/780 in the U.S. If they change their hardware or if we decide to change, we know that Sir/DBMS will be there."

"We have the people trained, and we can bring it up right away. Also, new machines come out all the time, especially Unix machines. Since Sir/DBMS runs on several versions of Unix, it will be no problem for us to move to Unix."

Buonomo explained that the benefits of using Sir/DBMS quickly became obvious. "Once it was installed, we were very pleased at the noticeable increase in performance, such as CPU utilization and disk I/O. But of even greater importance was the ease of use of the SQL+ component and the package's Forms system for interactive, screen-oriented data entry and query-by-forms."

"Some of the problems we had, such as how to

document changes through the data base easily, how to produce exception reports to see the reasons for changes in the clinical trials and how to control the data-entry error rate, were easily handled by Sir/DBMS," Buonomo said.

The data generated for an NDA is voluminous and complex, Buonomo explained. By the time an NDA is ready for submission, a drug has usually been studied in several hundred to several thousand patients. The NDA contains all the information the sponsor knows about the drug, and it can typically run into thousands of pages.

Use in all aspects of NDA process

Berlex plans to use Sir/DBMS in every aspect of its NDA process. Buonomo and his group have begun building a clinical DBMS with the package, which will provide data to all the departments involved in an NDA. According to Buonomo, the system will feed information to the Research & Development Finance Group, the Project Tracking Group, the corporate committee for Drug Regulatory Affairs, which reviews the NDA before submission, and the medical department for ad hoc queries.

"Eventually we will use Sir/DBMS for preclinical trials data and for running our laboratories," he said. "By getting the needed data quickly to all of these internal oversight groups, projects will move along much faster."

Although Berlex originally brought Sir/DBMS in to help with the clinical trials aspects of the NDA, it has proved itself useful in many other areas of research and development. "We looked at an \$80,000 package to do project planning," Buonomo said. "It basically was a DBMS with a program attached to it. Instead of going with that, we plan to implement the same type of capabilities with Sir/DBMS and save money."

Fourth Generation Productivity Enhancements for the SAS® SYSTEM

Turn the power of SAS into a total information system for decision support... with DS/Software. Four fully integrated products let you tap the analytical power of the SAS System in a user-friendly environment. So you have immediate, organized access to the information you need for sound decision-making.

DS/SQL An easy-to-use SQL-based query language for SAS. Allows you to ask complex questions of the data base in the form of English-like queries using SELECT FROM WHERE expressions.

DS/DB A direct-access facility for SAS data sets that increases your data access efficiency without increasing your programming effort.

DS/IDM A full-screen interactive dialog manager that gives you immediate, total access to your data base and drastically cuts down on training and technical support.

DS/GEN An interactive dictionary-driven information system generator. Allows you to define, generate, execute and restructure your DSS.

info tech

The Information Technology Company

You're interested in a total information system for decision support. Please send me more information on DS/Software and my free trial offer.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____ STATE _____ ZIP _____
CITY _____
OPERATING SYSTEM(S) _____
info tech P.O. Box 14543, Glenview, IL 60048 (904) 775-7624

5700 S.W. 34th Street
P.O. Box 14543
Glenview, IL 60048
(904) 775-7624

* SAS is a trademark of the SAS Institute, Inc., Cary, North Carolina. DS/SQL, DS/DB, DS/IDM and DS/GEN are trademarks of Info Tech.

Multiply Management Power —

with MAPPS.

Let us show you how!!

MAPPS (Management And Project Planning System) enables you to:

- **SIMPLIFY.** Reduce a large complex project to a model that you can manipulate. MAPPS has a cut-and-paste option that won't multiply complexity. (OK, more, logic errors.)
- **BE REALISTIC. TAILS.** The unique time processing feature, avoids artificial relationships between activities. (Reason makes sense for the tool worthless.)
- **TAKE CHARGE.** MAPPS was specifically designed to allow the executive or manager to control Time, Cost and Resources. (What else is new?)
- **BE YOUR OWN DATA PROCESSOR.** MAPPS lists and explains choices on a series of menus. Some require only a yes or no answer. Furthermore, the versatile Select-Set-Report system lets you tailor reports to meet your needs. (Paper seems to multiply enough. Do your part to reduce excess paper with well focused reports.)
- **BE FLEXIBLE.** Use any currency in the world. Or specify your week for any activity beginning on any day of the week.
- **ANTICIPATE.** Perform "what if" experiments on the network model to see results without actually committing resources. (Our Project Simulator opens new possibilities for the manager.)
- **HAVE A CHOICE.** MAPPS operates on Data General MV*, Digital VAX*, Wang VS* and computers using UNIX* operating system.

* Registered Trademark for Bell Laboratories, Data General, Digital Equipment Corporation and Wang Laboratories.



Mitchell Management Systems Inc.

PERSONAL SYSTEMS, PRODUCTIONS, INC.
Washington Office: 2000 First Street, Washington, DC 20001-0154
Telephone (202) 546-0000 Fax (202) 546-0001

NEWS

On-line DBMS helps lone programmer produce reports

HOUSTON — The business of buying and selling land for oil and gas exploration keeps some tall demands on the lone programmer for a growing independent oil and gas exploration company here.

Russell Whitton, senior — and only — systems analyst for Wainoco Oil Corp., has to produce reports for the firm's management that contain any combination of 60 different variables on 4,500 land leases, and his turnaround often ranges between 24 and 48 hours. "Instant access to critical information can make the difference between a good business deal and no deal at all," Whitton said.

Granted, he has help from some outside consultants and from his operations manager who "does his fair share of programming around here," Whitton said. But Wainoco's growth demanded that this small data center move away from programmer-supported applications and cumbersome Vsam files to a centralized data base accessed by many users.

"Whenever management needed an ad hoc report on a large land lease for use in negotiations, our programmers were faced with the task of writing the application to report the information. As the company continued to grow, it became obvious that we needed a system that could supply our users in the field with instant data access and analysis."

Wainoco turned to a relational data base management system (DBMS) targeted toward end-user access. "We needed a [DBMS] that would immediately give our programmers a productivity boost, provide our end users with information-center-like facilities to support the company's continued growth... and come in at an affordable price," Whitton said.

The firm chose CA-Univers from Computer Associates International, Inc. To Whitton, a relational DBMS seemed the obvious choice for several reasons:

- A relational DBMS has dynamic view capability that provides the end user with the ability to create or define relationships between data without regard to the storage structure or location of the data.

- With a relational DBMS, set processing replaces record-at-a-time (or procedural) processing. Users do not have to learn a procedural syntax or language in order to access, review, or update their data.

CA-Universer's price was also right for the firm, Whitton said, as it cost about half as much as other packages he investigated.

Besides experiencing some slow response times under early releases of CA-Universer, Wainoco's DP center has been satisfied with the DBMS from the outset. The data center utilizes a 2M-byte IBM 4331 Model II that runs under DOS/VSE and has a 100M-byte disk capacity. "What impressed me immediately about CA-Universer," Whitton said, "was how easy it was to use for programming."

CA-Universer provides several information processing tools and Wainoco utilizes four tools to simplify maintenance and development.

- A text editor facility, which permits programmers to store, retrieve and manipulate data dynamically.

- A relational command language,

which allows programmers to transfer data to and from the data base interactively.

- A forms editor, which eliminates the need for designing and modifying report formats.

- A forms driver and report generator, which allow access, retrieval and update of information without programming.

"These powerful facilities have helped us to reduce learning curves," Whitton said. "CA-Universer has improved the productivity and cost-effectiveness of our applications development and design so applications go into production much faster than before, at the right price." He said the DBMS has afforded a 50% to 60% pro-

ductivity increase over Vsam files.

"In addition," Whitton said, "we don't need a technical systems programmer to perform maintenance. That's a strong point with us," he said, because he has no systems programmers in his shop.

For end users, Wainoco has found that the screen-based facilities for creation, enhancement and modification of applications and the nonprocedural fourth-generation language of CA-Universer are the most used facilities.

"Requests that traditionally required a programmer's involvement can be satisfied by the end users themselves," Whitton said. "They can meet their own ad hoc information

requirements, effectively by selecting from a variety of on-line query and on-line information processing facilities."

Wainoco plans to build an information center around the DBMS. "We now have the technology to expand into an information center environment," Whitton said. By the end of the year, he plans to have user systems in place. And by the end of next year, he will start training users on CA-Easi, for example, the DBMS' report writer, to move them toward information center use.

"I don't have my users there yet," he said. "When the users start to satisfy their own requests, I'll say I'm there."

NEW FROM

ERGO 301 FK FUNCTION KEYS

Guaranteed V1100
Compatible PLUS

\$995

NEWS

Info center acts as data counselor, boosts productivity

NEW YORK — Sterling Drug, Inc. put the information center concept to the test three years ago to see if such a facility would be beneficial in supporting end-user computing in its six corporate groups located in 47 countries. Today, the existence of the information center is more than justified as the facility emerges as an integral factor in improving productivity of this pharmaceutical manufacturing company.

The Sterling corporate MIS group originally agreed to establish the information center pilot program because it was motivated by increasing people-power requirements and a growing applications backlog. The initial trial of the information center, which was scheduled for a six-month period, began with the appointment of a three-person staff: a new employee, an MIS professional and Valerie A. Martin, the user community representative and now Project Manager of the Information Support Group.

The staff first identified six vendor-supplied software systems already in-house, which would be appropriate for supporting personal computing by nontechnical and users. Those systems running on the corporation's IBM 3033 and 4341 included:

- PAC-II, the Project Management System from AGS Management Systems, Inc.
- Boscoe, a batch-oriented, interactive program generator tool from Applied Data Research, Inc.
- SAS, a statistical analysis system from SAS Institute, Inc.
- SAS/Graph, also from SAS Institute.

The second step was to begin working with a well-defined group of users in need of assistance. "The information center was not created to provide programming," Martin said. "Our staff is too small to be a quick-coding group. But we were there to help — to teach and coach users and to solve programming problems."

In 1981, 22,000 jobs used information center software tools. In the following year, the information center staff worked on a consistent basis with about 200 end users to complete more than 50,000 jobs.

"In 1982 alone, we realized an average savings of \$100,000 in cost avoidance," Martin said.

The information center established itself as a counselor on storing and accessing information of benefit to all end users in the organization. "People used to maintain information unique to their own disciplines and call it up from memory or personal files when needed," Martin said.

"They didn't know how to automate the data to allow it to become corporate knowledge. Today, these people use Inquire, our general-purpose database management system, to develop a better processing environment."

Installed at Sterling since 1974, Inquire was selected as an information center tool for several reasons, among them the system's English-like language. "It's easy for users to understand," Martin said. "But the information center staff recognizes another major reason for using Inquire. Inquire lets people change their minds. Even after the data base creation is complete, users may need new improvements as their applications grow. Because Inquire gives us

the flexibility to upgrade data bases, we are able to improve some data bases that are eight to 10 years old."

Another information center service is to provide new Inquire users with a macro-driven application to encourage them to design, test and install their own macros. "People who often use the macro library find a macro is a tremendous time-saving device. Entering such a one-word command can instantly produce a full-page report," Martin said.

"The information center also oversees the growth rate of the data bases and the library through monthly reports, which automatically flag data bases reaching 90% of their capacity. When this occurs, the information

center calls the users to alert them to the situation. Users also receive an Inquire maintenance report with each update of their data base," she said.

After just two years, the size of the Sterling information center staff has doubled in order to service the increasing number of users. "Feedback has been very positive," Martin said. "Users tell us they like Inquire because it allows timely data base updating on a periodic basis, has selective retrieval and report writer capabilities and offers user control with no DP intervention. Yet the most important feature is that users need only minutes, instead of several days, to find data with Inquire."

IRMA introduces a CICS file transfer system that will end PC-to-mainframe monkey business.



AT LAST!

RAMMING APPLICATIONS ON MICRO DISKETTES FROM NOW ON

Advantages of Micro-Diskettes vs. Perforated Paper Tapes

- Micro-Diskettes contain maximum
- Report printed "on-the-spot"
- Quickly eliminate work environment
- Deal with more computer hardware and software
- Programmed automatically to allow easy loading & unloading of tapes for IBM PC & compatibles
- Simple, easy-to-use instructions
- Can cost as low as \$8 per session



SATISFACTION GUARANTEED

NEWS



**TERMINAL
TIME**
Larry Long

Q We are debating whether to document the underlying program logic of systems that are developed with applications generators. Would you recommend creating program flowcharts for programs that are not written or designed, but are generated directly from screen layout specifications?

We are entering a new era in program development and system documentation. What we have traditionally documented during development with procedure-oriented code is not necessarily applicable to systems developed with very high-level languages.

I would recommend that you draft and maintain some type of graphic overview depicting the relationships between the major components of the system, but I would not recommend the documentation of the logic of system-created code. That would be overkill.

Q I hear talk of a new *Ansi* standard for Basic. My company has developed several successful proprietary software packages for microcomputers in Basic and I am currently writing an answer. Is there a new standard? If so, are interpreters and compilers available for the new standard?

The current *Ansi* standard has not kept pace with the evolution of the very popular Basic language. Fortunately, a new *Ansi* standard for Basic has been in the works for some time

and is being submitted for final public review this summer. By the end of the year, at least one software vendor will begin marketing interpreters and compilers for the new standard. I would expect (and hope) that major vendors will support the new *Ansi* standard once it becomes official.

Q I have been in the data processing industry for almost 13 years. In that period I have authored and copyrighted several applications systems and have sold them locally. These systems include payroll, accounts payable, general ledger, scheduling and others.

I would like to advertise my packages and address a much larger area. My problem is I do not know how to get started or whom to contact. My packages will run on all equipment support-

ing *IBM-8*. Could you tell me what steps I would take to market my software packages?

Traditionally, software vendors and entrepreneurs have relied on trade publications, direct mail, direct sales and trade shows to reach their audience. During the last few years, traveling product seminars and television have also become integral to software marketing strategy. Vendors are continually manipulating the allocation of their marketing dollars to achieve the most effective strategy. They also take advantage of "free" advertising by sending speakers to conferences and providing product releases to trade periodicals.

I don't want to discourage you as there are many millionaires-to-be out there, however, they will make their fortunes on products that are unique or are a substantial improvement over established state-of-the-art products.

You may be able to compete locally through personal contacts, but to compete nationally with standard systems, a totally integrated data base environment is a prerequisite. Even if you have the product, you have to be a little lucky to achieve market acceptance.

The expense involved in the development, marketing, sales and ongoing support of even the most basic product aimed at a national audience can be overwhelming. Unless you are independently wealthy or are willing to mortgage your home (and everything else), you might investigate the possibility of joining forces with a vendor that has an established distribution and support network.

For a modest investment of \$2,000 to \$5,000, you can test the waters by leasing a booth at a regional trade show and placing small ads in a few trade publications. Be forewarned; unless your product is aimed at an untapped audience or has some very seductive features, the response may be less than enthusiastic.

Q Six months ago I was promoted to a new MIS long-range planning position. During the last two months the director and I have been meeting weekly to outline the goals and objectives for our department.

We're having trouble distinguishing between the two and, as a result, are making little progress towards developing a long-range plan.

Could you help us delineate between goals and objectives?

The classic approach to any planning activity is to follow this process: compile a mission statement; identify objectives that more fully define the mission statement; state goals in terms of results; set strategies by which to accomplish the goals; then identify specific tasks that complement the strategies.

An objective might be to provide an acceptable response time to on-line users. The goals supporting this objective might be to keep response time under 1.5 seconds 95% of the time.

In practice, the distinction between objectives and goals becomes blurred when writing MIS long-range plans. Don't fall into the trap of arguing the distinction ad infinitum. If the objective leads to supporting goals (or vice versa), then make the distinction. If it does not, consider documenting the two as a single objective-oriented statement.

Far be it from DCA, the makers of the original PC-to-mainframe communications link, to close down the very same

information flow we created.

But that doesn't mean we aren't fully aware of the mess that unauthorized use of a PC can cause.

But how do you lock up the secrets without locking horns with PC users with legitimate requests?

Easy. Just get IRMALink DBX/CICS.

IRMALink DBX/CICS is a data file transfer system that allows the MIS manager to retain total control of the mainframe's database and, at the same time, gives PC and data center users quick and easy access to the files they need to have.

IRMALink DBX/CICS' Record Definition function

allows the MIS manager to designate which field, if any, can be extracted from a file on the host for transfer to a particular user.

Several record definitions can be easily created for a particular host file with each containing only selected fields from that file.

Data can be even further limited by assigning selection criteria to the records.

IRMALink DBX/CICS from DCA. It gives users the access they want. It gives MIS managers the control they need.

For more information, send in the coupon to DCA. For quicker results, call us at 1-800-241-IRMA. Telex 261375 DCAATL.

Mail to DCA, 303 Technology Park, Norcross, GA 30092. And we'll tell you more about IRMALink DBX/CICS and all IRMA products.

Name _____

Firm _____ Title _____

Address _____

City _____ State _____ Zip _____

Phone _____

dca
Data Communications Associates, Inc.

AP-02-81

IRMA and IRMALink DBX/CICS are trademarks of Digital Communications Associates, Inc. PC is a registered trademark of Digital Communications Associates, Inc. © 1984 Digital Communications Associates, Inc.

UNICALC/DB 3-D MAINFRAME SPREADSHEET

Easy to Use
CICS, EMVS, DC & TSO
UNLIMITED 3-D
Can Access DBMS

Lotus™ - VisiCalc™ Like Syntax
Automatic Backup and Recovery
Free Form Calculations
Security & Control



**UNICALC
CORPORATION**

(718) 807-5485
Two Academy Lane
Wayne, PA 19087



CALENDAR

WEEK OF OCT. 21

OCTOBER 21-24, TO-
RONTO — National Retail
Merchants Association Re-
tail Systems Technology &
Communications Confer-
ence. Contact: National Re-
tail Merchants Association,

100 W. 31st St., New York,
N.Y. 10001.

OCTOBER 21-24, MIAMI
— International Data
Corp.'s 1984 Fall Executive
Conference. Contact: Diane
Testa, International Data
Corp., 6 Speen St., Framing-
ham, Mass. 01701.

OCTOBER 22, SADDLE
BROOK, N.J. — Dealing
with Vendors & Suppliers.
Contact: Performance Semi-
nar Group, 11 Commerce St.,
Norwalk, Conn. 06860.

OCTOBER 22-23, CHICA-

GO — Software Tools for
Distributed Decision Sup-
port Systems. Contact: Soft-
ware Tools Conference, Suf-
folk University, Boston,
Mass. 02106. Also being held
Oct. 28-29 in San Francisco.

OCTOBER 22-23, SEAT-
TLE — Dimes II. Contact:
The American Institute for
Professional Education, Car-
negie Building, 100 Kings
Road, Madison, N.J. 07940.

OCTOBER 22-24, AT-
LANTA — Fundamentals of
Data Communications. Con-
tact: American Management
Associations, 135 W. 50th
St., New York, N.Y. 10050.

OCTOBER 22-24, WASH-
INGTON, D.C. — Oxford
Software International
User Group Meeting. Con-
tact: User Group Coordina-
tor, Oxford Software Corp.,
174 Blvd., Hasbrouck
Heights, N.J. 07604.

OCTOBER 22-24, LOS
ANGELES — International
Computer Negotiations
Third-Party Listing Semi-
nar. Contact: International
Computer Negotiations, Suite
1707, 200 St. Andrews Blvd.,
Winter Park, Fla. 32782.

OCTOBER 22-24,
BROOKLYN, N.Y. — Ap-
plications of Microcomputers.
Contact: Dr. C. Yapleakis, In-
ternational Society for Mini
and Microcomputers Sym-
posium, School of Engineering,
Pratt Institute, Brooklyn,
N.Y. 11205.

OCTOBER 22-26, WASH-
INGTON, D.C. — Software
Development and Main-
tenance in the Federal Gov-
ernment. Contact: U.S. Pro-
fessional Development
Institute, Software Develop-
ment in Government, 1620
Elton Road, Silver Spring,
Md. 20903.

OCTOBER 22-26, NEW
YORK — Structured Analy-
sis & Design Techniques.
Contact: Elise Rabalais, Lear-
month & Burchett Manage-
ment Systems, Inc., Suite
405, 2800 N. Loop W., Hous-
ton, Texas 77002.

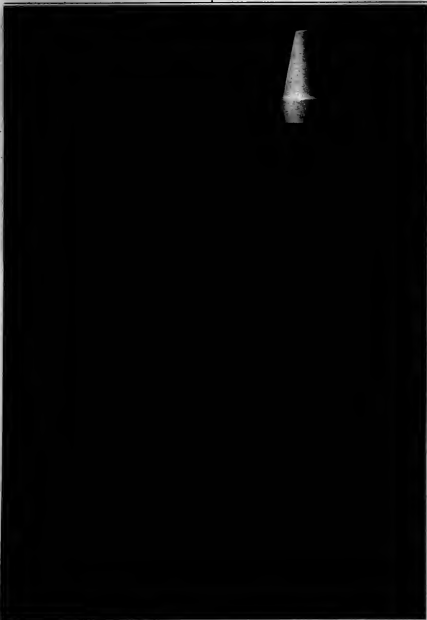
OCTOBER 22-26, WASH-
INGTON, D.C. — How to De-
velop an Effective Long-
Range Data Processing
Plan. Contact: Dr. Robert
Keston, Keston Associates,
11317 Old Club Road, Rock-
ville, Md. 20852.

OCTOBER 22-26, NEW
YORK — Application Pro-
gramming. Contact: Syed,
Inc., 35 W. 36th St., New
York, N.Y. 10001.

OCTOBER 22-26, BUR-
BANK, CALIF. — Applica-
tion Development. Contact:
IMS Consulting, Inc., 16500
Ventura Blvd., Encino, Calif.
91436.

OCTOBER 23, HAS-
BROUCK HEIGHTS, N.J. —
Service Management Semi-
nar and Trade Show. Con-
tact: Mike Urban, Global Uni-
macc, 4 North St., Waldwick,
N.J. 07463.

OCTOBER 23, NEW
YORK — T-1 Carrier Strate-
gies: The New Networking
Imperative. Contact: DMW
Group, Inc., 2020 Hogback



NEWS

Road, Ann Arbor, Mich. 48104.

OCTOBER 23-24, BOSTON — Information Connection. Contact: Software Institute of America, 5 Windsor St., Andover, Mass. 01810.

OCTOBER 23-25, LOS ANGELES — Database Support Systems. Contact: Software Institute of America, 5 Windsor St., Andover, Mass. 01810.

OCTOBER 23-25, WASHINGTON, D.C. — Selecting a Local Area Network. Contact: Marketing Manager, Technology Concepts, Inc., Old Country Road, Sudbury, Mass. 01776.

OCTOBER 24-25, NEW YORK — IBM vs. AT&T: Second One. Contact: Marilyn Chastown, The DMW Group, Inc., 5080 Hoback Road, Ann Arbor, Mich. 48104.

OCTOBER 24-26, BOSTON — Reports on Networks. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

OCTOBER 24-26, CHICAGO — Implementing and Managing Information Centers. Contact: American Management Association, P.O. Box 319, Saratoga Lake, N.Y. 12063.

OCTOBER 24-26, ST. LOUIS — Software Quality Assurance Seminar. Contact: Gilbert & Associates, 10612 Olive Road, St. Louis, Mo. 63141.

OCTOBER 24-26, WASHINGTON, D.C. — Equal Access Learned in Charlestown, Minneapolis and Other Equal-Access Markets. Contact: Telestrategies, Inc., Box 874, 6642 Elm St., McLean, Va. 22101.

OCTOBER 25-26, ATLANTA — The Sixth Annual Atlanta High-Technology Venture Capital Conference. Contact: Betty Parker, Department of Continuing Education, Georgia Institute of Technology, Atlanta, Ga. 30332.

OCTOBER 25-26, BOSTON — How to Plan and Utilize Your Video System. Contact: Probe Research, Inc., P.O. Box 560, Morristown, N.J. 07960.

OCTOBER 25-30, COLOGNE, WEST GERMANY — Orgatechak Cologne '84: Fifth International Office Trade Fair. Contact: Messe und Ausstellungen GmbH Köln, Postfach 21 07 60, 5000 Cologne, West Germany 21.

OCTOBER 26, NEW YORK — Anticounting the Not-for-Profit Sector. Contact: Center for Management, Box 530, 17 Lexington Ave., New York, N.Y. 10010.

OCTOBER 26, BOSTON — Ergonomics. Contact: QED P.O. Box Information Sciences, Inc., QED P.O. Box 181, Wellesley, Mass. 02181.

WEEK OF OCT. 28

OCTOBER 29-30, SAN FRANCISCO — Future Trends & Opportunities: The Next Five Years in Telecommunications & Microcomputers. Contact: Creative Strategic International, 4340 Stevens Creek Blvd., San Jose, Calif. 95128.

OCTOBER 29-31, BOSTON — Data Analysis. Contact: QED Information Sciences, Inc., QED P.O. Box 181, Wellesley, Mass. 02181.

OCTOBER 29-31, NEW YORK — Microcomputer Data Base Management Systems. Contact: Software Institute of America, 5 Windsor St., Andover, Mass. 01810.

OCTOBER 29-31, WASHINGTON, D.C. — Strategic Planning for Telecommunications. Contact: Technology Transfer Institute, 741 10th

St., Santa Monica, Calif. 90402.

OCTOBER 29-31, WASHINGTON, D.C. — Teaching Computer Software Producing Debug-Free Systems at Minimal Cost. Contact: U.S. Professional Development Institute, Testing Computer Software, 1680 Elton Road, Silver Spring, Md. 20903.

OCTOBER 29-31, LOS ANGELES — Financial Information Systems: Integrating Personal Computers. Contact: National Institute for Management Research, P.O. Box 5737, Santa Monica, Calif. 90403.

OCTOBER 29-31, NEW YORK — CICS Macro-Level Programming. Contact: Syed, Inc., 55 W. 85th St., New York, N.Y. 10001.

OCTOBER 29-31, ORLANDO, FLA. — IBM-DC Programming Workshop. Contact: Steve

Harris, Harris Education Center, Suite 407, 5230 S. Orange Blossom Trail, Orlando, Fla. 32809.

OCTOBER 29-NOVEMBER 2, WASHINGTON, D.C. — Comparative Data Base Management Systems. Contact: Chip Blotin, George Washington University, Washington, D.C. 20052.

OCTOBER 29-NOVEMBER 2, WASHINGTON, D.C. — Microcomputer Application Workshops Evaluating Microcomputer Software Packages. Contact: Chip Blotin, George Washington University, Washington, D.C. 20052.

OCTOBER 30-31, DALLAS — Competitive Edge Sales Seminar. Contact: Telecomm Magazine, 12 W. 21 St., New York, N.Y. 10010.

OCTOBER 30-NOVEMBER 1, SAN FRANCISCO — Integrated PERIs and Desktop Terminals. Con-

tact: John A. Gutman, Probe Research, Inc., P.O. Box 560, Morristown, N.J.

OCTOBER 30-NOVEMBER 2, SYDNEY, AUSTRALIA — Seventh International Conference on Computer Communications. Contact: Seventh International Conference on Computer Communications, 80

53C27A, P.O. Box 5609, New Brunswick, N.J. 08903.

OCTOBER 30-NOVEMBER 2, NEW ORLEANS — The 17th Annual Microprogramming Workshop. Contact: Institute of Electrical and Electronics Engineers Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

OCTOBER 31-NOVEMBER 1, SAN FRANCISCO — 1984 Voice Managing Tutorials. Contact: John A. Gutman, Probe Research, Inc., P.O. Box 560, Morristown, N.J. 07960.

Data Design's Financial Software
Type Demonstration Survey

Financial Software Problems Solved.

20¢

That's all it will cost you to send us the coupon below. But it will also help step toward solving your financial software problems. A step that has already been taken by thousands of accounting managers at hundreds of major companies. They have learned that they can finally rely on financial software systems by Data Design.

Why? Our Financial Applications Software Packages—all of which are developed by Data Design—can give financial computer reliability resulting in the industry, providing ease of use and trouble-free installation.

No wonder, then, that Data Design was rated as highly in the latest *Software* software survey. In San, in the ratings of General Accounting packages, Data Design's *Fixed Assets* and *Accounts Payable/Purchase Order* finished above all other packages studied. *Ahead of* MSA, McCrumb & Dodge and Software International. Our General Ledger and Capital Project Management System were two new to be included in this survey. We're dedicated to achieving the same results with these systems.

Data Design was rated higher in terms of overall satisfaction with product performance as well as in service and support. Technical and support offerings are especially important. Indeed, they provide the heart in the categories of vendor responsiveness, training and documentation—areas critical to providing the system operation. Data Design has consistently been rated the best in these categories in independently conducted independent software surveys.

Follow-up technical support customer is assigned their own personal Account Manager, telephone consultation and 24-hour emergency letter service are included with the purchase of each system. We are 100% satisfaction systems and in-depth training (at Data Design or at your facility).

So you see, our reputation for excellence has been built on providing only the highest quality software systems for:

- ☐ General Ledger/General Journal
- ☐ Accounts Payable/Purchase Order
- ☐ Fixed Assets
- ☐ Capital Project Management

To learn how these systems have solved financial software problems for a broad range of medium to large size companies on such major computer systems, complete and mail the coupon below. Enter your name in the box and call us today at (800) 565-2281. (408) 735-9076 California. WFS is direct.

DATA DESIGN
SOFTWARE

1770 Oakland Parkway, Berkeley, CA 94709

For more information, please fill out and mail this coupon to:

☐ General Ledger/General Journal	☐ Accounts Payable/Purchase Order
☐ Fixed Assets	☐ Capital Project Management
☐ General Ledger/General Journal	☐ Accounts Payable/Purchase Order
☐ Fixed Assets	☐ Capital Project Management
Name _____	
Title _____	
Company _____	
Address _____	
City, State, Zip _____	
Telephone _____	
Computer Brand _____	Model _____

EDITORIAL

An exemplary conference

Some random thoughts and observations on the recent Information Management Exposition & Conference, a.k.a. Info '84.

First of all, New York, and the coliseum in particular, is still a great place to host a conference the size of Info (35,000+), a DP manager's show second in magnitude only to the National Computer Conference. Spreading out the hundreds of vendor exhibits over four floors is vastly superior from the attendee's perspective to the sogglin field effect of NCC, where simply navigating the massive show floor requires a Ph.D. in logistics.

The seminars and work sessions, though not heavily attended at Info, were generally well planned and well executed — with one glaring exception. At a session the morning of Oct. 3, about 50 attendees sat and waited to listen to a panel discuss the use of information as a strategic weapon. The problem was that the panel and session chairman never showed up. Though apologetic, a conference spokesman could offer no explanation to the irate attendees. But this was the exception, the rule being good organization of the seminar schedule.

Eighteen dollars and fifty cents (plus tip) for a hamburger, french fries and a beer? So asked one *Computerworld* writer almost incredulously when the check for a midday meal was presented to her. Well, New York may not be the ideal conference site in every respect, but it sure beats Las Vegas in July.

A couple of other observations from the conference floor:

■ DP managers want more control. Of what? Of just about everything in their line of sight, according to a floor survey *Computerworld* conducted. As the trappings of computing power have filtered to some degree out of the DP shop and into end-user departments, DP managers have felt increasingly uneasy about the erosion of their control of information management. But the DP managers who address a company's most critical issues, such as the broad-scale, planned implementation of micro-, will earn corporate management's respect and therefore cooperation.

■ Managers are carefully choosing spending options in the face of modest budget increases. Another *Computerworld* floor survey revealed that managers are finding packaged software more to their liking. Less flexible and application-specific than the homegrown variety of software, it's also generally cheaper and can do many jobs adequately. Managers also revealed their anticipation of modest budget increases, especially outlays for salary increases. Comprehensive studies have borne similar predictions (CW, Sept. 17). Most importantly, managers appear to be planning for the future in this regard.

Like so many conferences and exhibits, there was much for managers to see and do at Info '84. Luckily, the show was organized and run in such a way that things could, in fact, be seen and done.



LETTER

Believe in documentation

The series of articles and features concerning documentation (CW, Sept. 10) was most interesting, very apropos and informative. I am sure that nearly every manager in the industry will agree with the expressed opinions — and go on to other more pressing topics.

From my faltering first efforts in 1960, I have probably written about 40-umpton thousand words for documentation efforts. I tried to include sex and violence in my documents, but most of it is probably unread except in a few enlightened installations.

The help wanted advertisements in the same issue highlight the problem most accurately. Besides those specifying all the acronyms plus the usual "excellent oral and written communications

skills," I believe there was only one advertisement concerned with documentation.

One must wonder if managers and project leaders truly believe in documentation.

G. M. Easley
Huntsville, Texas

Computerworld welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or less; they may be edited for the purpose of clarity and brevity.

Letters should be addressed to *Editor, Computerworld*, Box 506, 275 Cockburn Road, Framingham, Mass. 01701.

COMPUTERWORLD

Donald E. Fagan
Publisher

Editor	Executive Editor	Managing Editor	Assistant Managing Editor
John C. Whitman	Pat Broke	John C. Whitman	John C. Whitman
Senior Editors	Assistant Special Reports Editor	Editorial	Assistant to the Editor
Pat Galt	Steve Bantz	325 Main St., N.W.	John Fagan
John De	Book Editor	Washington, D.C. 20045	John Fagan
Pat Hinch	John Galt	20000 67th	Laura Bion
Tom Hinch	Staff Editors	West Corp.	Contributors
Eric Hinch	James Connolly	Business Unit: John Fagan	2 Carol Chap
Pat Hinch	Kathleen Burton	Contributions	Robert Connolly
Pat Hinch	Paul Kornegay	Kathleen Burton	Jack Stone
Pat Hinch	Mark Klock	1000 Maple St.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch	David Oros	West Corp.	Contributors
Pat Hinch	David Oros	West Corp.	2 Carol Chap
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Jack Stone
Pat Hinch	David Oros	West Corp.	Robert Connolly
Pat Hinch	David Oros	West Corp.	Larry Long
Pat Hinch	David Oros	West Corp.	Thomas Walsh
Pat Hinch	David Oros	West Corp.	John Fagan
Pat Hinch	David Oros	West Corp.	Laura Bion
Pat Hinch			

VIEWPOINT

Internships pay dividends for everyone involved



THE DATA
CENTER
John P. Murray

A number of technical colleges maintain internships programs so their students, usually in the semester prior to graduation, can gain experience in an actual information processing environment prior to joining the work force. If such a facility is located in your area, using these interns can produce an array of benefits for both your organization and for the intern. This can be an opportunity to develop an environment where everybody wins.

The use of interns can prove to be especially productive if you have a functioning information center. Because the interns will have had considerable technical training, they can, with a limited amount of orientation to your particular information center environment, accept assignments from the information center clients. With the help and supervision of these clients, they can produce very solid work.

As is the case with many information processing issues, there is no absolutely correct way to carry out this effort. One method that works well is to have the information center client act as the manager of the project. In this situation, the information center employees provide the required technical orientation and, where necessary, provide assistance to the interns.

This assistance from members of the information processing department should be limited; one of the benefits to the interns is the opportunity to solve problems on their own. Too much assistance on the part of information processing employees will thwart any opportunity to exercise some initiative.

Murray is director of management information services for Rayovac Corp., Madison, Wis., and author of *Management Information Systems as a Corporate Resource*, published by Dow Jones-Irwin.

The client is responsible for producing the design of the proposed system. Once the design (which may be little more than a concept and some supporting documentation) has been finalized, the intern and the client get together to review the project. The goal is to determine if there is mutual interest in the project and if the client and the intern feel they can work comfortably together. This is important. If the intern does not have an interest in the project, the final result may be something

The art in developing and delivering information systems is the ability to manage the entire project and to deliver, on time, that which is required.

less than a good job. The chemistry between the intern and the information center client is also important: if either party feels uncomfortable about working with the other, some other arrangement should be made.

The rules of the assignment should be kept simple. The client agrees to provide support and sufficient time to check on project progress, to review output and to be available to answer questions. The intern agrees to produce the system, write the programs and provide the required documentation.

The school and the organization will usually have an agreement as to the specified number of hours the intern will be allowed to devote to the project.

Given that circumstance, it is important the project be structured and the deliverables agreed upon in advance, so that the project can be completed within the allotted time, given reasonable diligence on the part of the intern.

Someone from the information processing department should review the proposed project to

ensure the practicality of its completion within the allotted time. It should be agreed, however, that if the project is not completed within the allotted time, the intern will provide the required additional time to complete the project. The determination of the final grade for the student is, of course, dependent to a degree upon the successful completion of the project. Therefore, it is quite reasonable to insist on completion. After all, one purpose of this exercise is to attempt to portray a real-world situation.

When interns are used in an organization, they are most always assigned to the systems and programming maintenance effort. While this can be helpful to MIS and while the intern does gain some experience, the use of interns in the information center setting can be more rewarding and productive.

Why? First, because the intern has an opportunity to see a total (albeit small) project through from beginning to end. In addition, he gains an opportunity to work in an interactive environment and to use some of the fourth-generation programming tools that may not be available at his school.

Perhaps the most significant value of this process is the opportunity to gain experience dealing with information processing clients. The art, if there is any, in developing and delivering information systems is in managing the entire project and delivering, on time, that which is required. Even though this is a small project, the experience can be very beneficial.

Does this process work? Our experience shows a growing interest on the part of information center clients to obtain the services of interns. The first several times we had interns available, we did have some difficulty in placing them; now, we have a waiting list of clients looking for interns. We also see an increasing interest on the part of interns to accept such assignments. Indeed, everyone does appear to win in such an environment.

One other important aspect of this process is that it gives members of the information processing section an opportunity to observe the work and the potential of the various interns for consideration for future employment.

As with MIS, OA payoff will come with centralization



HUMAN
CONNECTION
Jack Stone

What with all the office products pouring out of vendor factories, you would think that office workers are losing jobs by the thousands on the basis of the well-worn, but quite erroneous, postulation that office automation is synonymous with productivity.

As many burnt-out office systems analysts will testify, in many organizations, the cadre of staff continues to build in spite of substantial increases in overhead costs for newly installed hardware. "Where's the beef?" ask the big boys. "When do we see the big bottom-line payoff from this OAT?" A legitimate question to be sure — and one worth addressing.

Of course, everyone sees some important benefits coming into the office today, some of which are worth noting for the record: the "intelligent" typewriter, the compact laser printer, the cellular telephone, the personal computer. But executives expect, right or wrong, a much larger return because the aggregated investment in this

hardware is substantial enough to reach soon, if not already, the monumental proportions of a superminicomputer with all the bells and whistles. Some professionals wring their hands, answer their shoulders and produce a mellifluous answer to assuage the tormented executive brows, like: "Sorry about that, but you must rid yourself of your concerns and accept that the initial outlay for hardware and support is just an ante to get into the office automation game. You must prepare yourself for more heavy expenditures and manpower commitments. After all, your competitor is doing it, and you must do so as well."

A better answer

But that's not a good answer, even though the assessment is probably true. A better answer lies within the history of the data processing industry, as a matter of fact, within several cycles of the same.

You may be too young to remember, but nearly three decades ago, IBM announced the ultimate machine, the one that purportedly represented the entry level for all major businesses. (I remember well some of the sales literature that introduced the IBM 1401 as the "management information system of the future.") For the record, the 1401 was loaded with punched card reader plus all of 4K bytes of random-access memory, compared with the PCjr, whose entry-level configuration is 64K bytes.

What happened is that the machinery was highly successful, very reliable and did a great job for

the customers. And so the business chiefs bought the machines in droves, until one day, the accountants tallied up the totals and found that the outlays were astronomical. Pressures began mounting on IBM and the rest of the vendors to come forth with a single machine that would cut costs through centralization, performing the following tasks, among others:

■ Handle many applications simultaneously, so that the hardware investment would be limited to move RAM on a single machine, instead of multiple stand-alone mainframes.

■ Provide a single set of operating system programs for all applications both to serve as a vehicle for standardization and to cut redundant support costs for multiple systems.

■ Offer terminal communications so that users have immediate access.

The result? The lion's-groin IBM 360 and its competitors, which, after the bugs were more or less cleared out of the operating system, at least gave the customers their money's worth.

The moral of this story is that the OAT stand-alone hardware saga is something of the same ilk as the 1401 outlay: Benefits have been achieved and the investment has paid off, not only in faster paper work processing but also in the acclimation of the staff to the onset of the electronic office. Having achieved the initial goal, let's try to seek further relief through some level of centralization, not this time at the corporate data center, but rather in business offices that will control fairly complex local-area networks.

Stone is an independent management consultant, educator and writer, specializing in DP, human communications and personnel development, based in Washington, D.C.

WHEN THE BOSS'S KID STARTS REWRITING THE FINANCIALS, WHAT'S YOUR DEFENSE?

VMCENTER:

THE ONE INDISPENSABLE SURVIVAL TOOL FOR VM DATA CENTER MANAGERS.

Breaking into your online system isn't supposed to be child's play. But all too often, it is.

Unless, of course, you have VMCENTER.

VMCENTER is the one comprehensive system that addresses all your key concerns as manager of a VM data center. And none of those concerns is more important than the security of your system and data.

That's why VMCENTER provides multiple authorization levels—for maximum control over system usage.

It's also why we've designed VMCENTER to make it easy for you to customize your protection to meet specific needs. You can change passwords in a flash, encrypt data through simple commands, and use on-line reports to keep top management informed of potential security problems before they happen—not after.

But if you think VMCENTER is great for security, you should see what it does for disk and tape management, resource scheduling, workload balancing, and system accounting. In one stroke, VMCENTER eliminates all your biggest headaches. And does it in an integrated manner that's more effective than any possible collection of quick fixes.

VMCENTER. It's not much fun for the boss's kid. But it can be a lifesaver for his dad—and for you.

For more information on VMCENTER, call or write VM Software, Inc., 2070 Chain Bridge Road, Suite 356, Vienna, Virginia 22180, telephone (703) 821-6866.

VM
SOFTWARE INC.

1-CHS-1004

SOFTWARE & SERVICES

Five factors define micro-mainframe links

Levels offer planning horizons; aid users in making system decisions

By Raymond P. Wooley
Special to CWS

The confusing world of microcomputer-mainframe links can be better clarified by breaking it into a five-level architecture. These levels provide planning horizons for potential users of the micro-mainframe connection and supply two key benefits: Users have a much better understanding of the architectural choices available, and the choices allow informed users to influence vendors to produce the technologies they need.

Vendors are critical factors in supply-

ing micro-mainframe connections. When a user asks a vendor how to connect a micro to a mainframe, the vendor will usually present his method. Most users will simply accept the vendor's recommendation without investigating the other architectural choices. A different vendor will usually support a different connection technology. Knowing which way is best for a specific situation is the end user's responsibility.

The following is a synopsis of the five levels. The primary role of the microcomputer is to provide interactive user services (the user's window on the world), while the mainframe performs the tasks of aggregation, summarization, integration, data base management and main data storage. The objective is to obtain the advantages of both systems in a cohesive and cooperative fashion.

■ The simplest connection forces the

smaller machine to assume a role that is favorable, or dictated by, the larger machine. Normally this is done through terminal emulation, in which the micro is made to look like a terminal supporting the protocol of the mainframe.

This method of connection is slow, wastes power and can be very displeasing to the user. It also creates a high overhead on the mainframe, which has to deal with all the details of the relationship and waste resources as though it is operating with a dumb terminal rather than an intelligent computer.

■ In the second level, the relationship is a little smoother through use of more of the mutual power in the two machines. This is normally called file passing. In this form, one machine, usually the junior machine, submits a request to the mainframe

See 1984B page 76

INSIDE

Systems
Software/84

Application
Packages/86

DBMS/74

DEC's Baseway links controllers with applications

MAYNARD, Mass. — Digital Equipment Corp. has announced software designed to integrate industrial controllers with manufacturing applications.

According to a spokesman, DEC's Baseway software is intended to serve as the core of a manufacturing environment and as a framework for automated factory growth. It provides plant managers, engineers and factory floor personnel with flexible networking and applications sharing capabilities and a common user interface, according to a spokesman.

The Baseway product set consists of three components: the Shop Floor Gateway; the Baseway Application Software Bus; and Programmable Device Support. The Shop Floor Gateway is said to be an intelligent hardware and software communications device that runs on DEC's PDP-11 system and acts as a translator between

See 1984C page 75

Despite maintenance faults, Cobol remains entrenched in business DP

By Charles Roberson
CWS New York Bureau

NEW YORK — While fourth-generation languages offer great flexibility and ease of use, even their advocates say they will have a tough time displacing Cobol.

Cobol is the entrenched language for about 90% of business data processing in the U.S. Its biggest drawback is the difficulty of modifying and documenting Cobol programs, according to a panel of supporters and critics at the recent Information Management Exposition & Conference in New York.

Cobol is no longer the clear and easy-to-read language that it was intended to be when it was developed in 1960. So programmers are constantly "reinventing the wheel" when they rework Cobol programs, said Jerry Bitzer, president of Clarity Concept Systems in New York.

Only about 30% of Cobol's potential is used, Bitzer claimed. If coded consistently and documented well, Cobol programs would require far less maintenance, he asserted. In many installations, maintenance consumes more than 50% of the programming resources.

Thomas Nies, president of Cincom Systems, Inc. of Cincinnati, a vendor of the Mantis fourth-generation language, agreed that Cobol will remain popular for some time. But eventually, its high maintenance cost will outstrip the cost

of writing a new system in a more productive language, he said. Nies added that no one fourth-generation language can replace Cobol. Rather, several different languages are needed to handle different tasks with varying degrees of power. Powerful procedural languages will be used to write structured systems software, while

See 1984B, page 76

No one fourth-generation language can replace Cobol.

MVS/VS1 Users

Improve Response Time!



PMO

Reduces disk busy, channel busy and CPU utilization to dramatically improve response time and system turnaround!

Quick-Fetch

Gain virtual storage constraint relief and improve response time automatically!



Duquesne Systems, Inc.
2 Allegheny Cir., Pittsburgh, PA 15212
Call our Marketing Department:
1-800-323-3000
Inside PA: 412-323-3000

SOFTWARE & SERVICES

Cincom
purchasing
module out

CINCINNATI — Cincom Systems, Inc. has announced that the purchasing module of its Manufacturing Resource Planning System is now available. The software runs on IBM mainframes under IBM's DOS or OS operating systems using Cincom Systems' Environ/1 data communications monitor or IBM's CICS. It also runs on Digital Equipment Corp.'s VAX-11/780, VAX-11/750 or VAX-11/730 under DEC's VMS/VMS operating system.

The system includes the following components: purchased-item definition, vendor definition and sourcing, quotation management, materials planning and requisition control, purchase order management, receiving control and vendor analysis. The system also provides a single text function to store and communicate free-format information. Text can be accessed by text processing tools such as Cincom's Mantext.

Prices for the system are \$50,000 to \$60,000 for IBM environments and \$21,000 to \$33,000 for DEC environments. Cincom is at 2300 Montana Ave., Cincinnati, Ohio 45211.

SYSTEMS
SOFTWAREAPPLIED INFORMATION
SYSTEMS, INC.

VAX Bureau

A software package that allows Digital Equipment Corp. VAX-11 computers to communicate with Burroughs Corp. machines has been introduced by Applied Information Systems, Inc.

Using Burroughs communications protocols, the VAX Bureau runs as a device driver under DEC's VMS operating system and reportedly requires no modification to the Burroughs software. According to the company, the product supports the Burroughs point-to-point conversational and poll-select protocols.

Hardware devices reported.

Continued on page 66

Low-cost DSS available to universities

ATHENS, Ga. — As decision support systems (DSS) generators become commonplace in business, a concomitant shortage of DSS programmers has arisen. Recognizing this, DSS vendors have started to offer their packages to universities at reduced prices — or sometimes free — for use by computer science majors.

So said Hugh J. Watson of the University of Georgia and David P. Christy of Pennsylvania State University, who wrote a working paper entitled "A Survey of University Support Programs Offered by Vendors of DSS Generators." Watson and Christy have compiled information such as vendors, prices, restrictions, compati-

ble systems and support available to universities.

Different vendors support a variety of computers and operating systems, including mainframes, minis and micro from IBM, Burroughs Corp., Digital Equipment Corp., Hewlett-Packard Co., Prime Computer, Inc., Data General Corp. and many others, the authors said. Several

systems can be run on time-sharing resources as well.

Some vendors charge nothing or a small annual fee with the restriction that the package is used only for academic purposes.

For information, write to the Division of Research, College of Business Administration, University of Georgia, Athens, Ga. 30602.

PRODUCTIVITY RAISED

Productivity. For years businesses have tried to define it, refine it, unleash its incredible power. Then came the SPSS® Information Systems product line.

It brings you all the advantages of SPSS—including report writing, statistics, general data management, color graphics option—and much more. To boost your company's productivity like never before.

then convert your results into high quality graphs and reports—without any programming experience. Extended portability. Like all SPSS Inc. products, SPSS® is designed to run on a wide variety of computers. So as you add or change hardware over

SPSS

MANUFACTURING
CAPABILITY

FOR THE IBM 3090
For more information
Contact Charles White, at
Atlanta, Ga. 30303, tel. 404
P.O. Box 4000
Oak Brook, IL 60451
708 585-1111

SOFTWARE & SERVICES

Continued from page 84

edly supported by VAX Burroughs include the DEC DL-11 asynchronous interface and DEC's DUP-11, DU-11 and DF-11 synchronous interfaces. Q-bus versions of the interfaces are supported on DEC Micro/VAX DLV-11, DUV-11 and DFV-11.

Versions are also available for the DEC POP-11 running under DEC's RSX-11, IAS, RSTE/E and Micro-RSX operating systems.

A permanent license for

the VAX Burroughs is \$5,000.

Applied Information Systems, Suite 307, P.O. Box 2584, 500 Eastown Drive, Chapel Hill, N.C. 27515.

SOFTWARE CORP. OF AMERICA

Data Check Recovery Version 2.0; Pastdead Version 3.1

Software Corp. of America has announced versions of two products that run on IBM's S/370 and larger mainframes under IBM's MVS,

MVS/XA, VS/1 or MVT operating systems.

The Data Check Recovery Version 2.0 is used to recover data that has become unreadable due to permanent I/O errors and to correct soft failures routinely.

The new version incorporates several scanning and reporting features including Scandog, which helps identify and correct problems; the Nefix Option, which reports on data checks without automatically recover-

ing from them; and the Skip Displacement Report, which monitors the condition of a volume.

A permanent site license for Data Check Recovery Version 2.0 is \$9,500.

The company also announced a version of its Pastdead direct-access storage device performance tool. Pastdead recommends volume reorganizations that place frequently accessed files close together. Features in Pastdead Version 3.1 in-

clude Vsam reporting, dual density volume support and dynamic volume access.

A single CPU license is \$7,500.

Software Corp. of America, 465 Corvado Drive, Herndon, Va. 22070.

APPLICATIONS PACKAGES

THE BRIDGE, INC. Trak 2.2

The Bridge, Inc. has introduced Trak 2.2, an enhanced version of its project management software for IBM and compatible mainframes under IBM's CICS or TSO.

Trak 2.2, an on-line, interactive project management system, is said to offer improved scheduling techniques. It streamlines the rescheduling process by requiring only a few keystrokes to revise project dates. Using Trak 2.2, project managers can modify a project's starting date and the software will automatically recalculate the time line to reflect the changes.

The new version is said to allow managers to enter up to 18 lines of text per screen on the status of the project or other scheduling issues.

Enhancements include greater use of programmed function keys and improvements in Gantt charts.

Trak 2.2 costs \$9,500, with lease terms starting at \$350/mo. The company will provide current Trak users with the new version for a small handling charge.

The Bridge, 189 California Drive, Millbrae, Calif. 94030.

COMPUTER NETWORK CORP. COM-MAIL DIVISION EZ-Letter

The Com-Mail Division of Computer Network Corp. has announced a letter writer software package for direct mail marketers. EZ-Letter runs on IBM's S/370, 3000 and 4300 series computers, regardless of operating system.

EZ-Letter generates customized, personalized letters. It can handle personal, data-variable letters, direct mail packages, coupons, business reply mail, enrollment forms, membership forms labels and

Continued on page 88

TO THE HIGHEST

charts, bar charts and line charts appear at your command. Ponderous summaries and reports automatically turn out presentation-perfect. And complex SMF and RMF performance evaluations become routine.

YET IT'S AS SIMPLE AS 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-1289-1290-1291-1292-1293-1294-1295-1296-1297-1298-1299-1300-1301-1302-1303-1304-1305-1306-1307-1308-1309-1310-1311-1312-1313-1314-1315-1316-1317-1318-1319-1320-1321-1322-1323-1324-1325-1326-1327-1328-1329-1330-1331-1332-1333-1334-1335-1336-1337-1338-1339-1340-1341-1342-1343-1344-1345-1346-1347-1348-1349-1350-1351-1352-1353-1354-1355-1356-1357-1358-1359-1360-1361-1362-1363-1364-1365-1366-1367-1368-1369-1370-1371-1372-1373-1374-1375-1376-1377-1378-1379-1380-1381-1382-1383-1384-1385-1386-1387-1388-1389-1390-1391-1392-1393-1394-1395-1396-1397-1398-1399-1400-1401-1402-1403-1404-1405-1406-1407-1408-1409-1410-1411-1412-1413-1414-1415-1416-1417-1418-1419-1420-1421-1422-1423-1424-1425-1426-1427-1428-1429-1430-1431-1432-1433-1434-1435-1436-1437-1438-1439-1440-1441-1442-1443-1444-1445-1446-1447-1448-1449-1450-1451-1452-1453-1454-1455-1456-1457-1458-1459-1460-1461-1462-1463-1464-1465-1466-1467-1468-1469-1470-1471-1472-1473-1474-1475-1476-1477-1478-1479-1480-1481-1482-1483-1484-1485-1486-1487-1488-1489-1490-1491-1492-1493-1494-1495-1496-1497-1498-1499-1500-1501-1502-1503-1504-1505-1506-1507-1508-1509-1510-1511-1512-1513-1514-1515-1516-1517-1518-1519-1520-1521-1522-1523-1524-1525-1526-1527-1528-1529-1530-1531-1532-1533-1534-1535-1536-1537-1538-1539-1540-1541-1542-1543-1544-1545-1546-1547-1548-1549-1550-1551-1552-1553-1554-1555-1556-1557-1558-1559-1560-1561-1562-1563-1564-1565-1566-1567-1568-1569-1570-1571-1572-1573-1574-1575-1576-1577-1578-1579-1580-1581-1582-1583-1584-1585-1586-1587-1588-1589-1590-1591-1592-1593-1594-1595-1596-1597-1598-1599-1600-1601-1602-1603-1604-1605-1606-1607-1608-1609-1610-1611-1612-1613-1614-1615-1616-1617-1618-1619-1620-1621-1622-1623-1624-1625-1626-1627-1628-1629-1630-1631-1632-1633-1634-1635-1636-1637-1638-1639-1640-1641-1642-1643-1644-1645-1646-1647-1648-1649-1650-1651-1652-1653-1654-1655-1656-1657-1658-1659-1660-1661-1662-1663-1664-1665-1666-1667-1668-1669-1670-1671-1672-1673-1674-1675-1676-1677-1678-1679-1680-1681-1682-1683-1684-1685-1686-1687-1688-1689-1690-1691-1692-1693-1694-1695-1696-1697-1698-1699-1700-1701-1702-1703-1704-1705-1706-1707-1708-1709-1710-1711-1712-1713-1714-1715-1716-1717-1718-1719-1720-1721-1722-1723-1724-1725-1726-1727-1728-1729-1730-1731-1732-1733-1734-1735-1736-1737-1738-1739-1740-1741-1742-1743-1744-1745-1746-1747-1748-1749-1750-1751-1752-1753-1754-1755-1756-1757-1758-1759-1760-1761-1762-1763-1764-1765-1766-1767-1768-1769-1770-1771-1772-1773-1774-1775-1776-1777-1778-1779-1780-1781-1782-1783-1784-1785-1786-1787-1788-1789-1790-1791-1792-1793-1794-1795-1796-1797-1798-1799-1800-1801-1802-1803-1804-1805-1806-1807-1808-1809-1810-1811-1812-1813-1814-1815-1816-1817-1818-1819-1820-1821-1822-1823-1824-1825-1826-1827-1828-1829-1830-1831-1832-1833-1834-1835-1836-1837-1838-1839-1840-1841-1842-1843-1844-1845-1846-1847-1848-1849-1850-1851-1852-1853-1854-1855-1856-1857-1858-1859-1860-1861-1862-1863-1864-1865-1866-1867-1868-1869-1870-1871-1872-1873-1874-1875-1876-1877-1878-1879-1880-1881-1882-1883-1884-1885-1886-1887-1888-1889-1890-1891-1892-1893-1894-1895-1896-1897-1898-1899-1900-1901-1902-1903-1904-1905-1906-1907-1908-1909-1910-1911-1912-1913-1914-1915-1916-1917-1918-1919-1920-1921-1922-1923-1924-1925-1926-1927-1928-1929-1930-1931-1932-1933-1934-1935-1936-1937-1938-1939-1940-1941-1942-1943-1944-1945-1946-1947-1948-1949-1950-1951-1952-1953-1954-1955-1956-1957-1958-1959-1960-1961-1962-1963-1964-1965-1966-1967-1968-1969-1970-1971-1972-1973-1974-1975-1976-1977-1978-1979-1980-1981-1982-1983-1984-1985-1986-1987-1988-1989-1990-1991-1992-1993-1994-1995-1996-1997-1998-1999-2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-22

SOFTWARE & SERVICES

Continued from page 65
computer output forms.

The price of EZ-Letter is \$30,000.
Com-Mail Division, 5185 MacArthur Blvd. N.W., Washington, D.C. 20016.

INTERACTIVE SYSTEMS, INC. Mentor Version 2.5

Interactive Systems, Inc. has announced Version 2.5 of its Mentor modeling software for Digital Equipment Corp. VAX-11 and Decsystem-10 and -30 processors.

According to a spokesman, Version 2.5 features a tutorial that allows a first-time user to go through the steps of creating or modifying a spreadsheet. The tutorial can be accessed on-line in a split-screen mode. Also, predefined and user-defined row and column templates have been

added to the system to speed the initial creation of a model.

The package's existing multimodel budget functionality was also enhanced to include a set of forecasting routines, including single and multiple regression, time series analysis and exponential smoothing, according to the vendor. The enhancements join the system's existing functions of allocation, consolidation and external file interfacing.

Version 2.5 of Mentor is \$7,500.
Interactive Systems, 131 Middlesex Turnpike, Burlington, Mass. 01803.

UCCEL CORP. Imagine

Uccel Corp. has announced it will market the Imagine information retrieval system developed by Multiplications, Inc.

According to a spokesman, Imagine will be marketed for use with Uccel's IBM mainframe financial applications. An on-line, menu-driven system, Imagine provides query and report-writing facilities. Other features include password security and a data access design that provides greater control of sensitive data, the vendor said.

The system is also said to facilitate on-line access to information across various applications and allow users to tailor ad hoc or recurring reports and queries to their needs. Imagine will be packaged to enable Uccel customers to access specific application or multiple-access data files, including non-Uccel products. Imagine is priced between \$15,000 and \$60,000.

Uccel, Uccel Tower, Exchange Park, Dallas, Texas 75235.

SPSS, INC. SPSS-X Release 2.1

SPSS, Inc. has announced Release 2.1 of its SPSS-X Information Analysis System that has on-line documentation tailored to the Digital Equipment Corp. VAX-11 computer under IBM's VM operating system.

The SPSS-X on-line documentation facility gives users specific information on how to run SPSS-X in the VAX-11 environment. Covered topics include: the various modes of running SPSS-X; how to direct display output to alternative locations; memory management in SPSS-X; machine resources required for particular tasks; how to assign files and estimate file size and how to access the VMS sort utility to sort SPSS-X cases.

The price of 2.1 for the VAX-11 is \$6,000 with an annual renewal fee of \$4,500.

SPSS has also announced the SCSS data analysis tool for any computer under the Wang Laboratories, Inc. VS operating system. SCSS allows data entry and management and produces tables and graphs. It offers a range of statistical procedures and facilities for data selection and transformation. There are no system limits on the number of variables and observations, so SCSS will handle data bases of any size, the vendor said. The system prompts for information.

The package is licensed for a first-year fee of \$6,000 with discounts for academic and nonprofit organizations. Annual renewal fee is \$4,500.

SPSS, Suite 3000, 444 N. Michigan Ave., Chicago, IL 60611.

NEW GENERATION SOFTWARE, INC. Pace for IBM System/36

New Generation Software, Inc. (NGS) has announced that it will market MRM, Inc.'s Planning and Control System (Pacs) manufacturing software with the company's financial applications packages for the IBM System/36.

According to a spokesman, Pace is a closed-loop system that includes data bases facilitating planning and control, master production scheduling, material requirements planning, capacity management, priority dispatch, standard cost and standard job order costing.

NGS offers several accounting applications including general ledger, accounts payable, payroll, fixed assets and accounts receivable. NGS packages range in price from \$8,500 to \$19,750. MRM's Pace is priced at \$75,000.

New Generation Software, 3840 Roan Court, Sacramento, Calif. 95834.

J. L. HAM & ASSOCIATES, INC. Fixed Asset Control One System

J. L. Ham & Associates, Inc. has announced its Fixed Asset Control One System for the IBM System/36 computer. This system has been developed in conjunction with Behm, Robson, Osburn & Co. of Saginaw, Mich.

Features of the Fixed Asset Control One System include the ability to process multiple companies or entities, full support for the Federal Tax Act of 1964 and on-line data entry. The system produces reports such as summaries of group activity, acquisition reports that show amounts for

Continued on page 66

THE SOFTWARE SOLUTION

FOR CORPORATE MANAGEMENT



IBMPC® or XT™ Plus Compatible and Popular MS-DOS™ Micro.

TEMPUS-LINK & TEMPUS-DATA

Tempus-Link and Tempus-Data are highly advanced, yet easy to use tools for corporate micro and mainframe computer users. Their synergy and flexibility meet the needs of both non-technical and expert users.

Tempus-Data's dictionary provides security and access management at the field level for all specified databases and mainframe files. This access restriction is personalized to each micro user.

Tempus-Data can be used on-line to provide quick responses to your high-priority requests. Yet, precious mainframe resources can be conserved by deferring less pressing requests to batch mode execution.

Tempus-Link and Tempus-Data's Open Architecture allows DP experts to build complex micro applications where mainframe access is totally transparent to the micro user, and this from virtually any user-designed and packaged micro application.

Tempus-Link's unique virtual disk system gives Tempus-Data users direct on-line and batch access to files stored on their mainframes but written in micro

formats such as CSV and DIF™. Information Management and Data Control suddenly become simplified to DP professionals because micro files are now read and written in micro format through existing mainframe resources and even without micro.

Micro Tempus recognizes that high quality corporate information is a time-sensitive commodity. Its integrated approach assures that the data provided to the micro user can be kept in synch with the mainframe's version.

Tempus-Link and Tempus-Data from Micro Tempus - a modest investment in personal productivity - a cornerstone in developing the office of the future today.

™ IBMPC and XT are trademarks of International Business Machines Corporation.

™ MS-DOS is a trademark of MICROSOFT Corporation.

™ DIF is a trademark of Corbett Software Inc. • RAMP is a trademark of Business Control Systems (BSCS). • TOTAL is a trademark of CINCOM SYSTEMS. • ADABAS is a trademark of SOFTWARE AG OF NORTH AMERICA, INC. • MICRO-REL is a trademark of COMPU-TECH CORPORATION OF AMERICA. • DIF is a trademark of SOFTWARE AVE.

They're so smart they program their operators.



New Kodak Reliant
intelligent
microfilmer 2000

New Kodak IMT-250
microimage terminal

New Kodak Reliant intelligent microfilmer 2000 and IMT-250 microimage terminal.

Here's document capture and retrieval ability so comprehensive it actually directs, guides, and self-corrects the work of the operators.

The Kodak Whiz Kids possess so much built-in microprocessor power, they automate most of the functions once performed manually by the operator.

They monitor themselves continuously. Communicate with each other. Stop if something is wrong. They tell the operator in plain

English what went wrong, and how to correct it.

Our new Kodak Reliant intelligent microfilmer 2000 and IMT-250 terminal are the fastest, smartest, most accurate image management machines we've ever made.

We think they could help you file and find documents with ease and speed you never dreamed possible. If you think so too, mail the coupon.



Kodak's fastest and smartest.

Eastman Kodak Company, Business Systems Markets Division, Dept. DP4616, Rochester, NY 14650.

I'd like to know more about Kodak business imaging systems.

☐ Have your representative contact me.

☐ Send more information.

We capture and store _____ incoming documents per day.

We retrieve _____ documents per day.

Name _____

Company _____

Title _____

City _____

State _____ Zip _____

Telephone (_____) _____

SOFTWARE & SERVICES

Continued from page 88

Internal Revenue Service Form 3468, disposal reports that show amounts for IRS Form 4355 and gain or loss schedules for IRS Form 4797, according to the vendor.

The price of Fixed Asset Control One System is \$4,000, which includes source code. Multiple-site pricing is available.

J. L. Bunn & Associates, Maple Professional Building, 693 Maple St., Plymouth, Mich. 48170.

SOFT PRO SYSTEM, INC.

Computer-Aided Directory System; Service and Maintenance Tracking System

Soft Pro System, Inc. has introduced two products for Wang Laboratories, Inc.'s VS small business computers running under Wang's VS/

OS operating system.

The Computer Aided Directory System is designed for the preparation and updating of a telephone directory. It is said to eliminate relational coding for producing organizational listings, the vendor said. Features include: automatic search/modify for same name listings in multiple occurrences; on-line inquiry by partial name, telephone number, function or department; production of multidirection telephone directory systems; and global modification capabilities for same name listings occurring in multiple places. The price of the Computer Aided Directory System is \$10,000 per CPU copy.

The Service and Maintenance Tracking System provides service status or preventive maintenance, repair and machine rehabilitation. It

includes seven functional components: dispatch; service call tracking; machine tracking; contract management; financial analysis; equipment and asset inventory; and parts inventory.

The price of the Service and Maintenance Tracking System is \$25,000 per CPU copy.

Soft Pro System, 4121 MacDonell Ave., Richmond, Calif. 94805.

GEOGRAPHIC SYSTEMS, INC.

Highway Geofile

Geographic Systems, Inc. (GSI) has announced a cartographic software package that contains information on all interstate highways and major roads in the U.S. Highway Geofile runs on IBM mainframe computers and minicomputers running under IBM's MVS/TSO or VM/CMS and on

Digital Equipment Corp.'s VAX-11 computers running under DEC's VMS.

Highway Geofile is available in two formats. The first is a network format for route optimization analysis, with links (how many lanes in a road or highway, and so forth) and node (whether a location is an interchange, town or city) attributes for transportation and distribution applications. The second format, an overlay for computer mapping applications with GSI's Geomap software, can be used to overlay major roads as points of reference on color-shaded maps.

The package contains more than 40,000 geographic locations and 60,000 links between the locations. Interstate and state roads, privately owned toll roads and some county and local roads are included.

The Highway Geofile package is priced at \$10,000 for the overlay format or \$20,000 for the network format.

Geographic Systems, 204 Andover St., Andover, Mass. 01810.

DIGITAL SYSTEMS

1040 Tax Processing System; Estimating Inventory Control

Digital Systems has announced three stand-alone application software packages. The 1040 Tax Processing System and the Inventory Control packages both run on the Altos Computer Systems, Inc. Altos 886 computer running under Microsoft Corp.'s Xenix operating system. The Estimating package runs on Digital Equipment Corp.'s PDP-11 computers under DEC's RSX-11-M and on DEC's VAX-11 computers under DEC's VMS operating system.

The 1040 Tax Processing System is for tax accountants and features 38 federal tax forms and 36 state income tax routines. It will process 1040 tax returns individually or in batches in a multiterminal environment.

Estimating and Inventory Control are for the construction market, although Inventory Control has applications for accountants as well.

The 1040 Tax Processing System price ranges from \$3,500 to \$6,500. The Estimating package from \$6,000 to \$9,000 and Inventory Control from \$1,500 to \$3,500, depending upon configuration.

Digital Systems, 114 E. Gregory St., Pensacola, Fla. 32501.

MATTERHORN, INC.

MI-Project Release 1.1

Matterhorn, Inc. has announced a version of its MI-Project planning and control software. MI-Project Release 1.1 runs on IBM S/360 series mainframes under IBM's DOS or OS operating systems with IBM's CICS.

Enhancements include graphics output and simplified data collection, the vendor said.

Price of the MI-Project Release 1.1 is \$6,500 for the DOS version and \$7,500 for the OS version.

Matterhorn, 9615 Girard Ave., South Bloomington, Minn. 55431.

PERKIN ELMER CORP.

MCRA agreement

Perkin-Elmer Corp. has announced a joint agreement with MCRA, Inc. of Montrose, Calif., to make the MCRA Manufacturing System available on

Continued on page 78

PDSFAST: PERFORMANCE

PDSFAST is a super high-speed PDS Management tool developed by Software Engineering of America. Using PDSFAST, hundreds of installations large and small (including 8 of the Fortune 100), are saving 75 to 90 percent of their Elapsed Time, CPU Time and I/O Time in the following areas:

IEBCOPY Usage PDSFAST is a JCL-transparent replacement for Iebcopy doing Compression, Copying and Unloading of PDS datasets to Tape or Disk at 5 to 80 times the speed of Iebcopy.

SPFCOPY Provides ultra high speed compression under SPX 3.1 WITHOUT REQUIRING AUTHORIZATION.

SMP Processing speeds up ALL LEVELS of SMP processing by 25 to 90 percent.

DASD Space Reclamation PDSFAST can increase DASD space reclamation by 40 to 60 percent by automatically compressing all individual PDS's on a volume at super high speed before defrag and compaction procedures.

DASD Management PDSFAST interfaces with ALL EXISTING DASD MANAGEMENT PACKAGES reducing elapsed times by 75 to 90 percent.

PDSFAST benchmarks taken from user evaluations:

	Elapsed Time	CPU Time	EXCP's	Job Cost
52 cyl. PDS Compress				
Iebcopy	67 min. 18 sec.	12 min. 27 sec.	103,486	\$131.05
PDSFAST	3 min. 23 sec.	8 sec.	712	\$4.22
12 cyl. PDS Copy				
Iebcopy	9 min. 14 sec.	1 min. 20 sec.	10,792	\$18.47
PDSFAST	48 sec.	.7 sec.	122	\$1.75
47 cyl. PDS Unload to Tape				
Iebcopy	58 min.	14 min. 52 sec.	97,253	\$92.05
PDSFAST	4 min. 3 sec.	37 sec.	911	\$5.74
3380 TSO Volume Compress 2,679 individual PDS's				
PDSFAST Driver	11 min. 7 sec.	31 sec.	8,299	\$29.87

The PDSFAST driver interfaces with all DASD management and defrag packages.

Clearly, PDSFAST is the quickest, most efficient tool available for PDS management. Our users tell us that PDSFAST is the most impressive performance product they have seen in years.

PDSFAST is ultrafast, cost effective and state of the art, combining wide ranging performance benefits with transparent operation.

PDSFAST has become the corporate standard at over 500 data centers. We are sure it can benefit your installation.

For further information about PDSFAST please call your SEA at (212) 206-7660, located at 150 Fifth Avenue, New York, NY 10011.

SOFTWARE ENGINEERING OF AMERICA

SEA

Making multi-vendor office systems work together requires just one thing.



Soft-Switch.™

The idea seems simple enough: connect all of your office systems so that documents can be freely interchanged for editing, storage, display, and printing. That includes word processors, PCs running word processing packages, and mainframe terminals accessing DCF and PROFS.

Many vendors claim to connect multiple vendors' equipment through "protocol translation." And connect they can, but not communicate. To really communicate requires transforming the document coding so that it is fully editable at the receiving system.

Soft-Switch is compatibility

ITI's Soft-Switch is a program product for your IBM mainframe (MVS or VM) that allows users to send documents to other users with document translation performed automatically, to store documents in host libraries, and to retrieve documents from these libraries.

Soft-Switch communicates with IBM, Wang, Xerox, and NBI. It communicates with the MultiMate word processing program on the IBM PC, with DCF and with PROFS; with the IBM 6670 laser printer, and with standard hard copy printers.

Soft-Switch is totally consistent with evolving standards for office systems. In fact, Soft-Switch integrates multi-vendor office environments by first translating a document into IBM's level 3 Document Content Architecture (DCA), and then into the exact format required by the receiving workstation.

Soft-Switch solves today's problems

Let's say an analyst prepares a document on his PC with MultiMate. He executes Soft-Switch (which executes in the PC, as well as in the IBM host) and specifies distribution to his secretary's Wang word processor and to the 6670 laser printer down the hall. Soft-Switch provides the micro/mainframe link, transports the document from the PC to the IBM host, translates

the document from MultiMate format to DCA, translates the DCA format to Wang's WPS format and the IBM 6670 laser printer OCL format, and routes the documents to their final destinations.

Soft-Switch: a path to tomorrow

Already installed at many FORTUNE 100 companies, Soft-Switch integrates the technologies of protocol translators, text management systems, micro/mainframe links, message switches, and electronic mail systems to provide organizations with integrated office systems.

It's a product you need today, and will, no doubt, need even more tomorrow. To learn more about how Soft-Switch will make your multi-vendor office systems work together, call TOLL FREE

1-800-227-3800 Ext. 7028



**Integrated
Technologies,
Inc.**

Mail to:
Integrated Technologies, Inc.
200 North Warner Road
King of Prussia, PA 19156

I want to know how Soft-Switch can solve my office integration problems.

☐ I'd like to see Soft-Switch at work. Please contact me to arrange a free, no-obligation demonstration.

☐ I'm not ready for a demonstration, but I'd like more information on Soft-Switch. Please see that I get the full details without cost or obligation.

Name _____

Title _____

Company _____ Phone No. _____

Address _____

City _____ State _____ Zip _____

10104

SOFTWARE & SERVICES

Continued from page 68

PE's Series 3200 computers. The agreement also makes MCBA Manufacturing System's subset, Distribution and Accounting, available on both the PE Series 3200 and 7000 family of computers running under AT&T's Unix operating system.

The software system consists of 16 separate modules and is designed to provide manufacturing, distribution and accounting tools for a variety of business needs. The system may be tailored to track inventory, control cash flow, handle payroll and provide other essential manufacturing solutions, according to Perkin-Elmer.

Perkin-Elmer said that each module is priced separately, ranging in price from \$900 to \$4,000.

Perkin-Elmer, 2 Crescent Place, Overland Park, N.J. 07757.

INTECOM, INC.

Administrative and Accounting Package

Intecom, Inc. has introduced a package said to provide greater functional call-management reporting for the vendor's Integrated Business Exchange (IBX) voice/data line of communication systems.

Administrative and Accounting Package (AAP) uses a stand-alone Perkin-Elmer Corp. 3205 processor with 1M byte of memory and an 86M, 165M- or 320M-byte disk, the vendor said. Linked to the IBX systems by an RS-232C interface, the AAP is compatible with all IBX models utilizing the optional Call Detail Recording (CDR) feature.

The AAP produces reports covering general call accounting, network statistics and accounts receivable. On

a single CDR record, up to 28 forms of call information can be stored, the vendor said.

The package is priced at \$72,500. Intecom, 601 Inacom Drive, Allen, Texas 75002.

COMPUTER DESIGN & APPLICATIONS, INC.

DeltaGraph

Computer Design & Applications, Inc. (CDA) has announced a graphics slide creation software package for the medical profession.

DeltaGraph can be used with CDA's Maxdelta system and CDA's Microdelta imaging terminals. According to the company, the software package allows medical users to combine patient images with graphics to produce slides for lecturing and diagnostic use. DeltaGraph offers 256 col-

ors per display character, selectable text size and a shaded depth perception capability. Graphics slides can be viewed on the Microdelta imaging workstations, or users can produce 35mm slides from an optional imager with the DeltaGraph package.

Users can store, retrieve and delete slides from Maxdelta or Microdelta storage or manipulate slides for better display. DeltaGraph sells for \$405.

Computer Design & Applications, 411 Wherry Oaks Road, Waltham, Mass. 02154.

COMPUTER CONSOLES, INC.

TimeLaw is Law Officepower

Computer Consoles, Inc. (CCI) has announced a module for its Law Officepower software system. TimeLaw, a time and billing package, runs on the CCI Power 6/32, Power 6/20 and Power 6/30 computers running under CCI's Purpos operating system.

TimeLaw was developed by Vertis Corp. of Atlanta. It is an accounting application package that can be integrated into CCI's Law Officepower. Designed for medium- to large-size law firms, the package contains law firm billing, accounting and financial reporting functions. A general ledger package is available as an option to TimeLaw.

Pricing for the Power 6/32, with an additional \$7,500 for the general ledger, and \$30,000 for the Power 6/20 and Power 6/30 machines, with an additional \$5,000 for the general ledger option.

Computer Consoles, 87 Hinesbott St., Rochester, N.Y. 14609.

BATTELLE PACIFIC

Northwest Laboratories
Cage/GRM

Battelle Pacific Northwest Laboratories has announced the Computer-Aided Genetic Engineering/Genetic Engineering Machine (CAGE/GEM) software for any computer, workstation or graphics device running under Digital Equipment Corp.'s VMS or

Continued on page 74

EasyPROCLIB gave me an extra half day a week! *



EasyPROCLIB is a unique operating system enhancement that proves that you can please all of the people all of the time.

If you're in charge of your data center's procedure library it works for you by taking the responsibility for maintaining, controlling and repairing the system PROCLIB off your shoulders, freeing up time to get other work done.

"We have over 800 users. It would be a nightmare to manage without EasyPROCLIB."

Users like it because it gives them control of their own PROCLIBs, and they can modify them any time without involving the systems staff.

And data center management likes it because it increases overall productivity if a user creates his private library; it doesn't affect the system or other users. An EasyPROCLIB diagnostic message notifies the user, and he is responsible for repairing or restoring it.

"What would I do if they told me I had to give up EasyPROCLIB? I'd fight them!"

There's no limit to the number of procedure libraries that may be established with EasyPROCLIB. There can be a private procedure library for each department, each development group, each programmer—for as many different divisions as you need. This means that you don't have to worry about deciding whether a procedure should be included in the installer's procedure library—and users don't have to try to accomplish specific applications using less efficient general purpose procedures.

Because EasyPROCLIB is completely transparent, many users don't know that they have it. But the data center manager and staff know because it simplifies their job, cutting down house-keeping time and giving them more time to manage. Since it was introduced six years ago, Easy-

PROCLIB has been installed at hundreds of IBM VMS sites, and wherever it's been installed, it's still at work.

"We'll give you thirty days to see what EasyPROCLIB can do for you. FREE!"

You can try EasyPROCLIB in your own facility for thirty days on a no-installation takes about an hour of system programmer time and fifteen minutes of machine time.

For more information or to set up your free thirty-day trial, call today. 1-800-385-3535

480 Carlisle Drive
Beverly, MA 01915
(617) 334-1841

Software
Corporation
of America

*Comments from interviews with EasyPROCLIB users.
*Copyright 1984 Software Corporation of America.
EasyPROCLIB is the IBM VMS/MA, MVS/VS/VM, MVT/

S/38 PRINT CODER

Create reports
fast with new
design aid.

Get your design and coding time 50% for report programs. The design grid breaks on your screen and PRINT CODER automatically writes the output screen. Since it's the SCA, you can change old reports or create new ones quickly & easily. It works on PDP output screen or standard print line while providing complete documentation. Contact today about productivity for only \$995.

For FREE Demo Subst.,
CALL TOLL FREE
1-800-385-3535 Ext. 101

HELP/38
© 1984
Software Corporation of America
1000 Massachusetts Blvd.
Beverly, MA 01915 USA (617) 334-1841
Outside of America Circle

SOFTWARE AG

One perfect action creates a perfect reaction that grows and grows.

A pebble dropped into the water creates circle after circle, each growing from the one before it—and each one reaching out farther than the last.

At Software AG, each product in our integrated system grows naturally from your center of data.

- Our relational database management system readily adapts to meet your current and future needs.
- Our data dictionary defines how that data is used throughout your organization.
- Our communications system provides a secure network to give your users precisely the data they require.
- Our fourth generation language system transforms the data into information.
- Our end-user products deliver up-to-the-minute data to support better and faster decisions.
- And tomorrow's products will meet your needs by putting information power into wider and wider circles of users.

Every Software AG product comes

naturally from the one before it, and all products in our system speak the same language. That's because at Software AG, each product has been created as part of a master plan.

When we introduce a new product, we don't have to spend time struggling to make it fit with the rest of our products. We just move quietly on to prepare the next product to meet your needs.

We don't believe in surprises—we believe in anticipating the trends of the future and meeting them with new products today.

Now, it's up to you. You can take the one perfect action that will lead to perfect solutions. Call us today.

1-800-336-3761

SOFTWARE AG
ADABAS NATURAL COMPLETE

Where the future
comes as no surprise.

© 1984 Software AG of
North America, Inc.
ADABAS and NATURAL
are trademarks of Software AG
of North America, Inc.

CHI 1010

PRESENTING THE LATEST ADVANCES IN ARCHITECTURAL DESIGN.

Rising above the main campus at the University of Pittsburgh stands a Gothic tower called the Cathedral of Learning. Its exterior owes much to medieval architecture. Yet within its walls, you'll find another kind of architecture—one that's thoroughly modern. It's called Information Systems Architecture, the design principle governing the new technologies from AT&T Information Systems.

VOICE, VIDEO AND DATA FULLY INTEGRATED IN ONE SYSTEM

The University of Pittsburgh wanted a total solution to their information and communication needs. AT&T could provide it. We offered a system that fully integrates not just voice and data, but video functions as well.

It's all made possible with Information Systems Architecture, the unifying principle designed into every product we make and tying all our systems together. The reasoning behind it can be summed up in three words: communication, distribution and uniformity.

INFORMATION SYSTEMS ARCHITECTURE: THE PRINCIPLE

Communication

Because all AT&T products are communications based, they can communicate efficiently and effectively with each other and also with products made by other manufacturers like those of DEC and Xerox already being used at Pittsburgh.

Besides being great communicators, they're also great translators. So products from different manufacturers that are otherwise incompatible can communicate with each

other, using our equipment as a go-between. In this way, Information Systems Architecture protects both your past and future automation investments.

What's more, the system is functionally integrated, so various applications, such as Electronic Document Communication and Message Center, can work together and share information.

Distribution

Besides functional integration, we also provide function distribution. This allows applications to be distributed to whichever system component is most appropriate and cost-effective. Even to components in different locations, miles away from each other.

And all end-users, no matter where they are, or to which component they are hooked up, still have access to all functions in the system.

Uniformity

All our products are designed to be user-friendly, so they're easy to use. But beyond that, we've also made their operation uniform. A person trained in one location on one type of terminal will have no problem operating a different type of terminal located somewhere else. This keeps training costs down and your operation running smoothly.

With communication, distribution and uniformity as our watchwords, Information Systems Architecture guarantees an evolutionary system—one that can keep up with changing needs and changing technologies. That's why the University of Pittsburgh will always be a campus of the future, no matter what the future may hold.

THE TRADITION OF EXCELLENCE CONTINUES

The University of Pittsburgh, a distinguished academic leader for nearly 200 years, has called upon AT&T's century of communications experience to help them carry on their tradition. They're in good hands. Four thousand designers and engineers formerly at AT&T Bell Laboratories are now working exclusively to develop new business products at Information Systems Laboratories. Information Systems Architecture will give them the framework by which to tie those products into complete business automation systems.

It will provide our sales staff with a planning tool for total automation so that all needs are met, now and in the future.

And, because of our uniform design, the job of the largest, most experienced service staff in the industry will be that much easier.

To find out how AT&T Information Systems Architecture can put you on the road to total office automation, call 1-800-247-1212, Ext. 198.

WHEN YOU'VE GOT TO BE RIGHT

Circle AT&T Information Systems



Information Systems

SOFTWARE & SERVICES

Continued from page 70

Micro VMS operating system, or the Unix operating system.

According to a spokesman, scientists can use CAGE/GEM to simulate and analyze the dynamic relationships between genetic elements and deoxyribonucleic acid sequences. Features of the system include priority windows, color graphics, visual proximity capabilities and other analytical tools.

CAGE/GEM incorporates computer-aided design and human factors engineering techniques with a choice of genetic engineering data bases. Data bases currently available include the National Institute of Health-developed Genbank, European Molecular Biology Laboratories' DNA Sequence and Battelle's Genetics Database, according to the vendor.

CAGE/GEM prices vary according

to the client's configuration. Prices for DEC's VAX-11/750 or 11/780 machines range from \$20,000 to \$40,000, and for Hewlett-Packard Co.'s Series 9000 workstations, the price is \$30,000.

Battelle Pacific Northwest Laboratories, Battelle Blvd., Richland, Wash. 96352.

GEJAC, INC.

Arcep Resource Management and Chargeback System Version IV

Gejac, Inc. has announced Version IV of its Arcep Resource Management and Chargeback System. The package runs on Digital Equipment Corp. VAX-11 computers under DEC's VMS 3.0 or later operating system.

Enhancements reportedly facilitate real-time budget management and allow users to examine the status

of their computer accounts to provide control over expenditures.

Added features include an on-line, on-demand display that shows the current status of computer services expenditures, a status display at log-off and on-line budget management capabilities to monitor and control computer use on a real-time basis, according to the vendor.

The price for the package is \$3,995 until Dec. 31.

Gejac, P.O. Box 185, Riverdale, Md. 20737.

MICHAELS, ROSS & COLE LTD. MRC-Retriever Release 6.0

Michael, Ross & Cole Ltd. has announced Release 6.0 of its MRC-Retriever package for use with IBM's CPF 6.0 operating system on the IBM System/38. MRC-Retriever is a stand-

alone module in the MRC-Query series of end-user utilities.

MRC-Retriever allows users to build on-line inquiries into multiple files using any access path. Functions included with Release 6.0 include the incorporation of the shared-access path technology developed in other MRC-Query Series modules, user-designed and modifiable calculated fields, a keyword search facility and a command key option. Other features include Help key documentation, menus, multilevel security, single- and multirecord inquiry, modes and windowing capabilities.

Release 6.0 of MRC-Retriever is priced at \$1,140 per CPU.

Michael, Ross & Cole Ltd., P.O. Box 4557, Oak Brook, Ill. 60521.

VISTA CONCEPTS, INC.

Vista software bulletin service

Vista Concepts, Inc. has announced a software bulletin service for users of its Vista Securities Processing System (VSPS).

The bulletin service provides VSPS users who support their own VSPS installations with detailed technical information of software bugs and Vista's recommended fixes. Users will receive warnings of difficulties encountered by other VSPS users or discovered by Vista's software maintenance department.

The price of the bulletin service is one-half of the current VSPS monthly license fee.

Vista Concepts, 11 Broadway, New York, N.Y. 10004.

DATA BASE MANAGEMENT SYSTEMS

TOUCH TECHNOLOGIES, INC.

Intouch

Touch Technologies, Inc. has introduced an information management system written in Basic that has data management extensions. Intouch works on the Digital Equipment Corp. VMS operating system and supports DEC's Record Management System (RMS) and Relational Data Base (RDB) systems and user-defined record management systems. Intouch can be used in dialogue mode to assist noncomputer professionals. It can also be used as a compiled language. The system automatically shifts to dialogue mode when commands are incomplete.

Intouch will be available in the first quarter of 1985. Prices are \$4,500 for DEC's Microvax 1; \$7,900 for VAX-11/725 and 11/730; \$14,900 for VAX-11/750, and \$26,900 for VAX-11/780. Purchase includes one year of support.

Touch Technologies, Suite 101, 609 S. Escondido Blvd., Escondido, Calif. 92025.

INFORMATION BUILDERS, INC.

Focus interface

Information Builders, Inc. has announced an interface between its Focus product and Intel Corp.'s System 2000 data base management system.

According to the company, the interface permits Focus users running under IBM MVS and TSO to execute Focus reporting and data analysis functions against the System 2000 data bases. Functions include report writing, ad hoc queries, graphics, sta-

Imagine. Expand the way you think about information retrieval. It's the only query and reporting system built for CICS with: Entirely menu-driven architecture • Integrated on-line and batch query and report writing • Comprehensive system-managed control of CPU resources and data security • Integration of production files into an on-line informational data base. For more information, call (617) 547-8050.

MULTIPLICATIONS *

IMC has selected Imagine for use with its application software products. Multiplications has offices in the following locations: Cambridge, MA, Atlanta, GA, New York, NY, Oakland, CA, Rochester, NY, Toronto, ON.

© Multiplications Software, Inc. 1984. Imagine is a trademark of Multiplications Software, Inc.

SOFTWARE & SERVICES

tics and financial modeling.

Using the interface, data from System 2000 files can reportedly be downloaded to personal computers with Information Builders' Foclink microcomputer-to-mainframe link. System 2000 data can be structured in Software Arts, Inc.'s Data Interchange Format, Lotus Development Corp. or standard Asclii formats.

The interface has nonexclusive read-only access. It also supports dynamic file inversion and System 2000 passwords. Focus security is said to be fully supported, allowing an installation to limit System 2000 access at the file, segment, field and value-within-field levels, the company said.

The Focus interface supports multiple simultaneous users and can run in both batch and on-line modes. It is priced at \$8,500 or can be leased at \$240/mo.

Information Builders, 1250 Broadway, New York, N.Y. 10001.

CHICAGO AERIAL SURVEY, INC. CAS-T-100

Chicago Aerial Survey, Inc. (CAS) has announced a translator program that allows IBM mainframe users with IBM's Distribution Facility Information System (Dfis) to use Intergraph Corp.'s Intergraph data entry system, running on Digital Equipment Corp.'s VAX-11s with DEC's VMS operating system. It allows for data base creation by converting Intergraph format records to Dfis.

The translator is designed for users involved in automated mapping and facilities management data conversion. The CAS-T-100 is available as software or as part of CAS' data

conversion services.

Prices of the CAS-T-100 range from \$40,000 to \$60,000.

Chicago Aerial Survey, 2140 Wab Road, Des Plaines, IL 60018.

UNIQ DIGITAL TECHNOLOGIES Unity Release 3.1

Uniq Digital Technologies has announced Release 3.1 of its Unix-based Unity relational data base management system (DBMS).

Unity is said to run on Digital Equipment Corp. VAX-11 and PDP-11 processors under both AT&T and University of California at Berkeley versions of the Unix operating system. Unity combines a relational DBMS with fourth-generation applications development facilities.

Features of Release 3.1 include the addition of a report writer, a data

manipulation language (DML) and Paint, a screen painting facility that allows users to design screen forms interactively. Using DML statements, a user can add records and delete existing records without programming.

Release 3.1 of Unity is priced between \$1,500 and \$14,500.

Uniq Digital Technologies, 88 S. Water St., Batavia, IL 60510.

SIR, INC. SQL+

Sir, Inc. has added a module to its Sir/DBMS package. The SQL+ relational query system, an expanded version of IBM's relational Sequel query language, is now included in the Sir/DBMS for Control Data Corp.'s Cyber series running under CDC NOS; Data General Corp.'s MV series running under DO AOS/V; Digital Equipment Corp.'s VAX-11s running under the DEC VMS and the University of California at Berkeley Unix 4.3 system; Hewlett-Packard Co.'s HP-9000 running under HP-UX; IBM and IBM plug-compatible computers running under IBM OS/VS and VM/CMS; Prime Computer, Inc. computers running under Prime's Prime; and Sperry Corp.'s 1100 series running under Sperry's EXEC.

Prices of the Sir/DBMS packages with SQL+ range from \$18,000 to \$60,000, with discounts available.

Sir has also announced the conversion of its Sir/DBMS to run on Apollo Computer, Inc.'s Domain workstations under Apollo's AUX/Argus. The SQL+ module is included.

Price of the Sir/DBMS package in a multiple-node system is \$25,000. Sir, Suite 400, 520 Davis St., Evanston, IL 60201.

ADABAS

Our relational data base management system.

NATURAL

Our fourth generation language system.

COM-plete

Our communications system.

At Software AG, each product in our integrated system grows naturally from the one before it, and all of our products speak the same language. We don't believe in surprises—we believe in anticipating the trends of the future and meeting them with new products today. And that's the proper plan for the world leader in systems software.

Call us today. 1-800-336-3761.

 SOFTWARE AG

Where the future comes as no surprise.

DEC from page 63

specific shop floor devices and a host computer.

The Gateway supports two communications protocols, the Allen-Bradley Data Highway and the Gould, Inc. Modicon Modbus programmable controller network. The Gateway interprets data from each of these devices and translates it into a common data structure. Integration is achieved by communicating this data via Decnet communications to the Baseway Application Software Bus for use by applications such as Programmable Device Support.

The Baseway Application Software Bus, which runs under DEC's VMS operating system, communicates with control devices on the shop floor and provides a common means of sharing information. It also provides an audit trail that tracks activities within the computer system and on the shop floor.

The first manufacturing application supported by the Bus is DEC's Programmable Device Support, which is a menu-driven system that is capable of uploading and downloading, reading and writing, comparing, documenting and maintaining a library of "ladder logic" programs.

The minimum configuration required to run the Baseway product set includes a VAX-11/750 with VMS and a PDP-11/24 with DEC's RST-110 operating system. The Shop Floor Gateway component is priced at \$4,000. Programmable Device Support at \$4,000 and the Baseway Application Software Bus at \$18,000. DEC is located at 146 Main St., Maynard, Mass. 01754.

SOFTWARE & SERVICES

COBOL from page 63

flexible, nonprocedural languages will be more productive for iterative applications development, he said.

Nies further asserted that compilers are the cause of much of the programming crisis that exists today. Compilers were needed when computers were slow and memory was scarce, he noted. But because they require constant relinking and recompiling of programs, they are inadequate for today's fast-changing DF environment.

Nies said the use of Cobol has created a bottleneck in systems development. It is the Cobol programmer who is responsible for integrating the functions of applications, teleprocessing monitors and data base management systems, he noted. When instructions are converted to Cobol,

they must be poured through the compiler's machine language funnel. A fourth-generation, interpretive language uses no compiler and sidesteps the bottleneck, he said.

Kathryn K. Miller, manager of a program development group at Mobil Oil Corp. in Fairfax, Va., said her staff developed a new system of 126 programs in 247 days using Information Builders, Inc.'s Focus, Execucom Corp.'s IPFS and SAS Institute, Inc.'s SAS. Doing the same task in Cobol would have taken more than 2,000 days, she said.

Easy-to-read fourth-generation languages allow quick changes as well as quick development, she said. By using them, she and her staff have "almost eliminated the maintenance backlog."

But no one fourth-generation language does all the tasks of Cobol, so

none of them are candidates to replace Cobol, she added. Nevertheless, she believes fourth-generation languages are here to stay and "are getting better every day." Their main drawback is that they consume more computer resources. Batch processing takes five times as long with a fourth-generation language as with Cobol, she said.

Robert Wagner, programming manager of Fur's, Inc. of Lubbock, Texas, a Cobol advocate, said the problem with Cobol is not its inherent limitations so much as "the widespread incompetence in the programming industry."

Fourth-generation advocate Nies agreed. As programmers become proficient in Cobol, they move on to become systems analysts or some other learning position, he said, leaving average programmers to work in Cobol.

LINKS from page 63

For a particular file. The request is authenticated, and the file is selected by the mainframe and passed down to the junior machine.

Alternatively, the junior machine can compose a file using its own native capabilities for text editing, data base management or whatever. It then presents the file in batch form to the mainframe.

The relationship is better than that of the first level in that each machine can operate in a passive mode as well as in a fairly compressed mode to pass files back and forth.

Not interactive

The key problem with this architecture is that it is not interactive; it is essentially a batch file transfer process. But it does work reasonably well.

■ The third level is the traditional level of distributed data processing, called command transfer. In command transfer processing, one essentially composes a native job run sequence on one machine and then transfers it to the other machine and asks for that sequence of operations to be performed.

Here, the burden on the smaller machine is increased so that transfers can happen more effectively and more interactively. With an operating system like AT&T's Unix at this level, the same set of commands can be used in both processors.

■ At level four, the relationship is called transparent service. In this level, attempts are made to create, assemble and transfer relationships between machines in a natural mode. This means all message formatting, commands, controls and actions are automatically serviced by the machines with minimal direct user intervention.

For example, a company would logically build a new hardware box and let that hardware be the intermediary.

A manufacturer of data base machines would want its customers to use them as the intermediary between machines. A communications company would want its network to be the intermediary. Local-area networks are now trying to be an intermediary between a variety of machines to provide some kind of transparent service. Many new products will debut on the market to support this kind of transparent view of connection in the next three to five years.

■ The fifth level is not only transparent but is also anticipatory, involving some degree of artificial intelligence.

The micro user pursues information from existing data bases, and the systems processor has enough intelligence to look ahead and deliver information that might be of interest to the user. Instead of waiting for a request, requirements are anticipated so that information will be readily available and actively downloaded to the micro.

For example, when somebody asks for a record with the name Johnson in it (where there are perhaps 20 different spellings of Johnson), the system intelligently accesses all possible matches based on the phonetic composition as opposed to a key request. Another example is to use a history of types of report requests made by the user to produce the high-frequency reports on a prepackaged basis.

Announcing

The one-stop, international advertising service for micro marketers.



On 128 microcomputer buyers all over the world with Computerworld's International Marketing Service (CIMS). Because we have the microcomputer market covered with an international network of publications. And what a market!

As the need for computer-aided in government, industry and educational systems all over the world becomes more acute, countries look to the cost-effective, adaptable microcomputer to bring them into the computer age. This means a very lucrative market for the U.S. micro marketer, since international product demand exceeds product supply.

Now, with the help of Computerworld's International Marketing Service, you can advertise in twenty magazines devoted exclusively to supplying information to microcomputer users in: Australia (Micro World), Australia (PC World), Brazil (Micro Mundo), Canada (PC World Canada), Denmark (Micro Verden), Finland (Micro), France (Golden, GPC), Japan

(PersoCom World), Mexico (Compu Mundo), Norway (Micro Data, PC Mikrodats), Sweden (MicroData, Min Hemdatort), Spain (Micro Sistemas), Sweden (Shenka PC World), The Netherlands (Micro/Poly), West Germany (MicroComputerworld, PC Welt, Run).

And your advertising message can reach buyers of microcomputer products and services around the world through special micro sections in any of over 60 publications in 25 countries.

Act now—and take advantage of this international demand for microcomputer products. Whether you want to test the market—or locate a distributor or representative—our publications will put you in touch with the right people around the microcomputer world.

For more information on getting international micro coverage, call Diana La Muraglia, General Manager, International Marketing Service, toll-free, at 800-343-0474. In Massachusetts, call 617-479-0700 or return the coupon below.



Please send me information on your:

☐ Microcomputer publications ☐ Your other foreign publications

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

C COMPUTERWORLD SERVICE INC.
Diana La Muraglia, General Manager
International Marketing Service
CWS Communications, Inc.
375 Commonwealth Blvd., Box 880
Framingham, MA 01701

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

COMPUTERWORLD

ISSN 1041-7542

U.S. MAIL PERMIT NO. 1000 NEW YORK, NY 10108

~~\$44.00~~ **\$39.00**

As a weekly newspaper, **COMPUTERWORLD** gives you thorough and timely coverage of news and ideas to computer users. Unlike monthlies, **COMPUTERWORLD** covers hundreds of relevant news items each week. But beyond the "news" you get much more. Weekly "In-Depth" articles, monthly "Special Reports" on selected topics, special focus issues and more.

With this order form, you pay only \$39.00 (just 76¢ a week). That's a \$5.00 savings off the annual rate. So, invest in the best, subscribe today!

Complete this form and mail in the postage-paid envelope or use your charge card and call, toll-free: 1-800-343-5730.

NAME

COMPANY

ADDRESS

CITY

Please send me **COMPUTERWORLD** for one year. **RATES:** United States \$44;
Canada, Central & South America \$110; Europe \$165;
All Other Countries \$245 (Airmail Service)

IN DEPTH

Talking, hearing computers

Naturally speaking

Can voice be the ultimate communication medium between man and machine? It's portable and everyone has one. Now if only every computer could talk.

By Hal Glatzer

[At a desk near the window, Sulla is typing letters.]

DOMIN [dictating]: Ready?

SULLA: Yes.

DOMIN: To E.M. McVicker and Co., Southampton, England. "We undertake no guarantee for goods damaged in transit. The vessel was unsuitable for the transport of robots, and we are therefore not responsible for spoiled freight. We beg to remain, for Rossum's Universal Robots, Yours Truly."

[SULLA, who has sat motionless during dictation, now types rapidly for a few seconds, then stops, withdrawing the completed letter.]

SULLA: Ready?

SULLA: Yes.

DOMIN: Another letter...

Sulla is a robot in Carel Kapek's 1920 play "R.U.R." She not only understands Domin's voice but transcribes it. Today, computers are the robot secretaries in our offices, but they still can't do what Sulla could. It's not that

they aren't "smart enough." Rather, it's that engineers have not yet solved the interface problem.

Like oil in an engine, the interface between computers and people keeps two dissimilar elements from grinding each other down; and like a diplomat, it helps each side to think that the other side speaks the same language. A good interface is neither purely mechanical (a keyboard or mouse) nor purely intellectual (an operating system). Rather, it is something conceptual that is partly hardware and partly software. There isn't yet a name for it.

"User friendliness" is a popular expression, but it is as elusive out of context as "humor" or "beauty." The words "artificial intelligence" are not only self-contradictory, they are too general — like calling everything from limpets to sharks "fish."

Computers and people are learning to understand one another in new ways, and — fortunately — it's the computers that are changing as a result. But people have to



IN DEPTH/NATURALLY SPEAKING

change a little, too.

"People don't realize what computers can do right now. They see computers in science fiction movies using voice-recognition input. But those computer interfaces are here now!" So says Bill Eichen, technical marketing engineer at Votan, a San Francisco-based company specializing in voice recognition and synthesis products. Of course, he admits, "the talking typewriter [like Slicka in "R.U.R."] is not here. Computers don't have unlimited vocabularies, and the English language is no vast. You need 100,000 or more words resident in the computer at one time." But there is a form of voice input that works: the kind that is "speaker-dependent."

You train the computer to recognize a voice in the same way you train a dog: repetition and reward.

You speak the digits, special words (such as factory commands or form lines to fill out), and the system loads them into its memory as digital impulses. Then it tries to make comparisons with those stored words each time it hears something. When it succeeds, it is rewarded by being allowed to move on to another task. What the computer does is to sample the signals that come through its microphone. A sample can never be perfect, but then people are not infinitely sensitive either. We have a persistence of vision that makes 24 or 30 still pictures per second seem to "move." Sampling voices a few thousand times a second is sufficient to reproduce them.

"I'd like to position voice as the ultimate communication medium between man and machine," Eichen says. "It's portable; we all have it;

and you can use it from all locations

— even by phone from the desert." Once a computer accepts voice input, it can run any conventional software with sounds instead of keystrokes. With a spreadsheet program, a financial officer can ask for changes out loud, using words previously stored in the computer to substitute for the menu options or commands. It can be done now — Votan has put it onto Sorcim Corp.'s Super Calc — but it's limited to the numerals 0 through 9, the arithmetic functions (plus, minus), the letters of the alphabet and a few standard commands.

It forces the user to speak in an unnatural dialect: 378/3.66 comes out "Three seven eight divide three decimal six six." That's much longer — and less convenient — than entering the numbers on a 10-key pad. It

will be years before a computer can parse an expression like "Twenty-treedollarsandfiftycents, please, quawdash, makeshowmuch." Even if it isolated the first sounds and got \$23.50, what about the "quawdash"? Is it a "quarter-dollar" (\$0.25), or is it "one-fourth of \$23.50?"

Not sophisticated

Human beings take for granted things that would baffle a computer. For a secretary to move the cursor in a word processing program by saying "down three lines, to the 'E' in 'technology,'" the computer will have to grow far more sophisticated than any that presently exists. The sound of the "y" (pronounced "ee") and the name of the letter "E" are homonyms. The computer would have to comprehend the difference and — to respond to the user's needs — choose between the alternatives according to a table of most likely and least likely possibilities.

Eichen and his associates expect that by 1990, they will have reached a different goal: speaker-independent recognition. That is, no matter who is speaking — even if the computer has never heard that person before — at least a small set of words (the digits, plus "yes" and "no") will be intelligible. Votan hopes to give its boards a vocabulary that includes the states of the U.S. and the names of colors (for color graphics screens). But it has not solved the problem of varying pronunciation, especially accents.

The key apparently lies in the search for the elusive artificial intelligence. Speech recognition today depends upon making voiceprints, which are like fingerprints. A voiceprint contains information about pitch, frequencies and so forth. When the computer hears a word, it tries to match that with one of its stored images.

But the problem of matching voices without a stored voiceprint

Votan answers

Want to teach a computer to speak? You can try it yourself, by calling Votan's demonstration system at (415) 480-7979.

A computer-generated voice welcomes you to the demonstration and asks you to repeat some words: the digits 0 through 9, the words "yes," "no," "California," "Kentucky," and "New York." It asks you to wait for a tone before responding. Once it has recorded two or three versions of each word, it asks you to name one of the three states. If you say "California," it replies: "You said California. The capital of California is Sacramento." Then it asks, "Would you like another demonstration? Answer yes or no [tone]." The voice then responds appropriately to your next word.

If you try this demonstration, don't use a speakerphone with a voice-activated switch: it can clip the first syllable off of each word that either of you speaks. Business may adjust for it, and interpolate the missing word, but the computer can't.

POPPY[™] XENIX 80286. True Multi-User Expandability to 12 Workstations.

Durango's Poppy is the first true multi-user, multi-tasking business system combining economy, power, and versatility. Running the new industry standard in operating systems... Xenix.

And Durango is the first company to deliver this advanced multi-user business system.

Price/performance is exceptional. Incorporating exclusive dual processor architecture — Xenix 80286 main processor enhanced by an 80186 for system throughput — Poppy provides speed and pro-

cessing power no other business system in its class can match.

Workstations (Poppystations[™]) can be added anytime with total shareability. Data is protected with both file and record lockout.

Poppy has 3271/75, 2786/3780 and 3270 SNA/SDLC communications capability. A 1.2 MB Poppy disk drive. Main memory to 1152 MB. On-line storage expandable to 120 MB hard disk. An optional integrated streaming 20 MB tape backup. High resolution graphics, 34" tilt/swivel monitor, and 132 character display.

With Xenix, Poppy supports hundreds of standard software programs now available. And as Poppy supports other operating systems such as MS-DOS[®], MBO5/5[™], and Multi-User Concurrent CPM-86[™], Poppy has functional capability with applications currently being run.

Poppy Xenix 80286 is the perfect alternative to

individual computers. A business system that grows and provides protection for the future. One business system with enormous growth capability. One data base (and the same shared information and programs) — no matter how many people are using the system... simultaneously.

Poppy is the new standard in multi-user business systems. Expandable, so it grows with your business. Multi-user to unify applications within your business. All in one cost-efficient personal business system.

Ask about the new Poppy Xenix 80286 and what multi-user can do for you. Call 800 32-POPPY for the dealer near you.

POPPY
The Personal Business
System

© 1984 Durango Systems Inc. Poppy is a registered trademark of Durango Systems Inc.

Xenix and MS-DOS are trademarks of Microsoft Inc. MBO5/5 is a trademark of BCS International Inc. Concurrent CPM-86 is a trademark of Digital Research Inc.

IN DEPTH/NATURALLY SPEAKING

How computers sample voices

If you were to speak into an oscilloscope and "freeze" one second's worth of a sound, it might look like the graph in Figure 1.

In practice, a sound may be sampled 8,000 times or more every second. But for simplicity, we'll sample it 10 times and measure just the amplitude (loudness) from the vertical axis. We'll plot the waveform 10 times — once every 1/10 second — and use just three bits to represent each value.

At the start, the amplitude has a digital value of zero (000). After 1/10 second, it has a value of 1 (001). After 2/10 second, it has a value of 2 (010). After 3/10 second, it has a value of 3 (011).

Between 3 and 4/10 second, the curve rises beyond the value of 3, but drops back to a value of 2 before 4/10 second has elapsed. So the value we record at 4/10 second is 2 (010). A faster sampling time — say, 30 times per second — would have been more accurate, but we'd generate twice as many samples, so we would need twice as much computer memory space to store it. After 5/10 second, the value is 1 (001) again. The subsequent values are 2 (010), 3 (011), 3 (010) and 1 (001), as shown.

The computer stores the values

Linear predictive coding is much more memory-intensive and requires greater computing power, but it is also more accurate and more likely to be used in the future for input that is not speaker-dependent.

in their original order, and when it hears a new sound, it samples that one. Then it compares the two strings of binary numbers against one another. If the second one is the same (000, 001, 011, 010, 001, 010, 011, 010, 001) then it will assume that there is a match and act accordingly. As we have seen, though, the computer may allow for several different curves to be matched, as long as the values at the sampling points are the same.

Another approach to voice recognition is called "linear predictive coding."

In any graph, there are values along the X and Y axes that — when connected — produce a line. If the values change in simple ways, a straight line can be generated; if the values change in

more complex ways, curves result. Most voiceprints are composed of curves, and it is possible to derive equations from them which predict the curve that would result from a similar (though limited) set of sample points. Linear predictive coding finds these equations in the original voiceprint and uses them for comparisons with new sounds.

For simplicity, we'll look at a straight line (Figure 2). The equation that defines the slope of this line is $X = YT$ (two increments along the X axis for every one increment along the Y). Let's say that that is the stored voiceprint.

If we introduce a new voice sample and plot some of its points on the graph, we can derive an

equation for a line that will connect the points. If we find that it is the same, we can hypothesize that the two voiceprints match. A computer can deal with more complicated equations or curves and match their coefficients much faster.

Linear predictive coding, then, is the prediction of a line, as expressed in computer code. While amplitude/frequency sampling may use a few hundred bits of storage for a single voice print (Votan uses 128; Interstate Voice Products uses 256 bits), linear predictive coding consumes as much as 2K bits per voiceprint.

The Bell system uses linear predictive coding. Linear predictive coding is much more memory-intensive and requires greater computing power, but it is also more accurate and more likely to be used in the future for input that is not speaker-dependent.

That is, it can probably predict the curve of different people's voices better than amplitude/frequency sampling can and, therefore, can match a wider range of sounds.

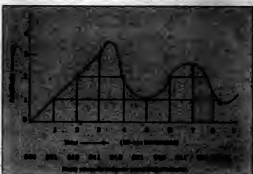


Figure 1. Sampling

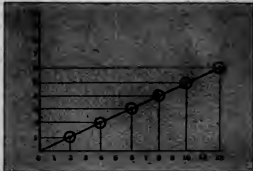


Figure 2. Given these sample points, we can derive an equation to predict where additional points will fall. If the equation for the sample matches the equation stored for the vocabulary word, there is "recognition."

HIGH PERFORMANCE PRINTER

LOW COST - IBM COMPATIBILITY

The highly reliable Innovator 300-LPM printer system will keep your costs down without sacrificing performance. Our field proven impact print mechanism, housed in an ultra quiet cabinet, provides you with years of dependability, at a price you can afford. Should your printer need maintenance at any time, there are over 100 service locations nationwide for your convenience, with service starting at just \$42 per month.

The Innovator printer system is compatible with nearly any micro, mini of mainframe. We offer a variety of interfaces for your communications needs, including:

- IBM 2780/3780 BSC
- Burroughs Poly>Select
- Centronics/Datapoints
- IBM 3270 BSC/SNA
- IBM 34/36/38
- RS-232 Serial ASCII

NEW - IBM 3270 Type A Coax 3287/88 emulation is now available for immediate delivery!

Call today toll free, and ask us how you can keep your costs down with the Innovator printer system. 1-800-327-3955.

Innovative

(305) 824-1844

INNOVATIVE ELECTRONICS, INC. • 4714 NW 185 St., Miami, FL 33014

VS-MULTITERM by VS/CMS VS-MULTITERM by VS/CMS VS-MULTITERM by VS/CMS VS-MULTITERM by VS/CMS

ARE THOSE GUYS CRAZY?

VSI has been marketing software for VM systems for over two years. Almost nobody knows this and it is driving the boss crazy! In spite of our better judgment, the boss insists that we drop the price of our MULTITERM product from \$2,500.00 for a perpetual lease to \$300.00 (a maintenance fee of \$300.00 will be charged annually).

This special offer will only last 30 days. Order now, before the boss sees his analyst; it would be CRAZY not to.

PS: Look for our national mailer describing the use of the VSI-MULTITERM. A product allowing access to multiple virtual terminals from one physical terminal.

Other Quality
VSI Products
VSI-VISION
VSI-BACKUP
VSI-RESOURCE

VSI Inc.

**Vision
Software
Incorporated**

610 35-475 610 Weymouth Way • Weymouth, MA 01978

VS-MULTITERM by VS/CMS VS-MULTITERM by VS/CMS VS-MULTITERM by VS/CMS VS-MULTITERM by VS/CMS

IN DEPTH/NATURALLY SPEAKING

for comparison is enormous. And the logical rules for interpreting speech are more complicated than native speakers appreciate. Simple plurals (a suffix "s," pronounced "z") may be easily implemented, but what about irregular plurals ("mice"), slang ("okay") and regionalisms ("a regular coffee")?

DAVID: [from space] Open the Pod Bay door, HAL.
HAL: I'm sorry, Dave. I can't do that.

This man-machine dialogue is very different from the one between Domain and Sella. Superficially, the HAL computer in Arthur C. Clarke's 3001 has a straightforward task: (1) distinguish the words from background noise; (2) adjust for pronunciation and separate each word from its neighbor ("uh'pah'p"); (3) check the words in a dictionary; (4) parse the sentence (it's not clear until the end that the astronaut is addressing HAL); (5) translate the command into electronic signals; and (6) decide on a course of action.

But it's HAL's responses that makes the exchange so complex. HAL does not merely reverse the process; it (1) determines what it wants to say; (2) translates its signals into English words; (3) identifies the listener (Dave); (4) experiments with sentence structure (making two sentences instead of one); and (5) uses rhetoric for poignancy ("I'm sorry, Dave") and irony ("I can't do that" really means "I won't do that").

Computerized librarian

HAL, in other words, works with human language in what — to a human being — is a natural way. The scientific term for that is "natural language processing," and it's finding its way into the business world in the form of a computerized research librarian.

Given this command: "TXN 82 Q," the Dow Jones News/Retrieval Service will return the stock prices for Texas Instruments, Inc. in every quarter of 1982. But an occasional investor might not be able to remember the syntax of that query or may be so poor a typist as to fumble with the keys.

So researchers at TI (and at other companies) have developed natural language processors that put the whole operation into English. Using TI's product, Natural Link, the user can enter a complete sentence: "What were the stock prices for TI for each quarter in 1983?"

Although it might seem faster to type the "TXN 82 Q" query, the user doesn't type the whole sentence. He selects the words, one at a time, from a menu in a window: starting with the word

"What": adding the verb phrase "were the stock prices for"; selecting "TI" from a list of stocks in a portfolio; narrowing the search with the qualifier "for each quarter in" and typing "1982" to complete it.

The screen displays the choices, and the user picks from them. Even with no typing skills, executives can use Natural Link themselves.

"Our aim was to take some artificial intelligence derivatives out of the corpo-

rate research lab and bring them to the product level," said Sue Metzler of TI's Dallas research center. The applications best served by natural language processing are those in which there are many different people with different needs — all of whom have to query a single data base.

One key to progress in natural language processing lies in closer and closer approximation of the user's own speech patterns. But the

trade-off for having such processing power is its hunger for random-access memory (RAM). The process is memory-intensive because the computer must hold both the user's and the remote computer's vocabularies simultaneously.

To access Dow Jones, for example, Natural Link needs 256K bytes of RAM. Today, not many users have installed that much RAM in their computers, but by 1990 virtually all business ma-

chines will have at least 512K bytes or 1M byte of RAM inside them.

Another key to achieving AI is to make the computer do things the same way a person would. A program called Insearch Intercedes with a large and difficult to use data base — Lockheed's Dialog — to help novice or occasional users find what they want quickly.

As Bob Tabke, a founder of Menlo Corp., explains it, "We made Insearch easy to

IBM 4300 Alternative:
Global - The Optimum Solution

**Greater throughput and major
USX Series the optimum 4300**

Until recently, you had two choices in planning a mid-range DP environment. You could go with the 4300, and get almost enough performance at a price you could almost afford. Or you could put together a multi-vendor system—and pray for support when the time came.

Now Global offers you the better alternative: It's our **ULTIMACC LSX** plug-compat. line series—the only single-vendor alternative to the 430-based or ULTIMACC LSX line.

Higher Performance
ULTRAMAC Systems can offer up to fifty percent greater throughput than comparable 4300 models. That means you can now expect to meet top-end performance demands never before possible in comparable single-processor systems.

Higher performance usually means a higher price tag. But not with ULTIMACC. In fact, our MSX Systems cost considerably less than you'd have to pay for equivalent systems elsewhere. So, you can now plan to own up a mod-

1. **UNION** - The union of two sets, A and B, is the set of all elements that are in A or in B or in both A and B.

certain no damage has occurred in transit.

Once your USIMACC USA is up and running, Global keeps it that way with total, ongoing system support. This includes in-depth operator training, easy-to-understand documentation, efficient on-site service worldwide—and

IN DEPTH/NATURALLY SPEAKING

One key to progress in natural language processing lies in closer and closer approximation of the user's own speech patterns. But the trade-off for having such processing power is its hunger for random-access memory.

use by building on what people already know: They were familiar with the command window idea from using VisiCalc and 1-2-3. So each query looks like a spreadsheet, from the user's point of view.

Similarly, each data base from which the user can choose looks (on the screen) like a card in a card catalog. We don't have to touch that — anybody knows the analogy. In a lot of ways there are analogies between

data bases and books — an overlap of subject matter but with different slants in each.

Clearly, one of the hallmarks of an artificially intelligent interface is its use of analogies between what the user expects to see and what the computer actually does — drawn from the user's experience and not from what is technically happening inside the computer. But that takes a lot of storage and computing power.

Sam Biglione, president of Interstate Voice Products, points to some of the limitations and trade-offs of voice recognition in particular and AI in general. "As the size of the vocabulary goes up, it restricts the speed of the system's performance — its ability to process new words. You may have to use 'tricks,' like partitioning the dictionary. To catalog parts, you can keep the measurable in a special vocabulary that only comes into the computer when you proceed them by saying the words' part number."

Error rate

Another limitation is the inherent error rate. Approximately 1% or 2% wrong for every 50 or 100 words is common. Higher error rates come with larger vocabularies because of homonyms. Noise also increases the error rate, and that has produced a psychological problem that stands in the way of greater acceptance of voice-recognition systems. Biglione admits that "the microphone has to be kept pretty close to the mouth in most environments because of the noise. It's especially true in offices, and people there just don't want to wear telephone-operator-type headsets."

Still, Biglione and Eichen see voice-recognition systems as consumer products — becoming accepted first as peripheral add-ons to computer systems, in the same way that disk drives and printers are. Later, they will serve to distinguish one product from another. "Not by the color of the box," says Eichen, "but by the special feature of voice recognition."

Are computers becoming smarter? That's the wrong question. The search for AI is ongoing, and those first products have applied some of the research into practical areas. People are building computers that come closer and closer to mimicking human thought processes. It makes no sense to ask if they are growing smarter. We should ask instead: Do we know enough about ourselves to know what we mean by intelligence?

It's like the search for life on other planets. Carl Sagan is fond of saying that when Percival Lowell insisted that the lines he saw on Mars were canals, dug by sentient beings, the presence of intelligent life in the universe was confirmed — at least on his end of the telescope.

About the author

Bel Glatzer is the author of five books on computers and communications. Based in Seattle, Wash., he is the Northwest correspondent for Software News and a contributor to several anthologies, magazines and trade journals.

savings make Global-Ultimacc's solution for your company.

Global Systems Hotline, which is ready to help you solve problems 24 hours a day, 365 days a year.

Discover the Global Solution Building the best possible DP solutions to your growing business needs isn't easy. But that's exactly what Global-ULI is doing every day

—with proven, quality systems

like our ULTIMACC SX Series.

Call today 1-800-538-7900.

And discover for yourself how performance, price, and total system support make ULTIMACC the optimum solution for your 4300 environment.

2902 Orchard Parkway
San Jose, CA 95134
1-408-946-6000
Toll-free: 1-800-538-7900
A StorageTek Company

ULTIMACC SYSTEMS, INC.
A Subsidiary of Global-Ultimacc Systems



**Now that we're published monthly,
you have twice the opportunity to
reach the communications market...**



November

Who uses digitized-voice store-and-forward systems? What's the latest on combining voice and data? Telephony has branched out into many sophisticated systems. We'll look at how voice communication is being integrated into the whole communications system.

Closes October 5



December

Almost a year after the AT&T break-up, users have been deluged by companies promising one-stop shopping. We'll look at the dominant vendors, offer guidance on selecting a vendor, and discuss the pros and cons of making a single-vendor commitment.

Closes November 9

Call the Sales Office nearest you to reserve space for your ad. Or, if you prefer, fill out the coupon below and return it to: Christopher F. Lee, Associate Publisher, Computerworld On Communications, 375 Cochituate Road, Box 880, Framingham, MA 01701. Do it today.

To: Christopher F. Lee, Associate Publisher
Computerworld On Communications
375 Cochituate Road, Box 880
Framingham MA 01701

Please send me advertising information on:

- ☐ the Voice Communications issue
☐ the Surviving in the Multi-Vendor Environment issue
☐ Please have a sales representative call me.

Name _____

Title _____

Company _____

Address _____

City _____

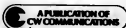
State _____ Zip _____

Telephone _____

Computerworld

On Communications

BOSTON: Maureen Sebastian, 375 Cochituate Road, Box 880, Framingham, MA 01701 (617) 879-0700
NEW YORK: Thomas Flynn, Paramus Plaza 1, 140 Route 17 North, Paramus, NJ 07652 (201) 967-1350
SOUTHERN CALIFORNIA: Jayne Donovan, 18004 Sky Park Circle, Suite 244, Irvine, CA 92714 (714) 250-1305
NORTHERN CALIFORNIA: Chris Clyne, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025 (415) 329-8220



IN DEPTH

In micro-to-mainframe communications, transparency to the user can make the difference between a technical "patch" solution and an end-user solution.

There are trade-offs to be made in each of the following steps:

1. Access mainframe data.
2. Transfer mainframe data to micro environment.
3. Convert mainframe data into micro format.
4. Access data from micro application.

This sequence can be rearranged in a number of ways, depending on where the work is best accomplished. In particular, data conversion from mainframe to micro format can take place on the mainframe, the micro or a combination of the two. Data conversion is the least understood part of the problem and the biggest barrier to easy access of mainframe data.

Anyone who wants to access mainframe data must have a clear understanding of the format in which that data is available. The specific bytes and data formats do not have to be clear, but the means necessary to get to the data must be. These means can range from detailed record formats that describe an old-style binary data file to data dictionary operations and very simple commands of the nonprocedural language used by new-generation report generators. In between lies a whole range of forms by which

Making connections in the shadow of the mainframe

By Richard L. Roth

"But the data exists on my mainframe." In this seemingly simple statement lies many of the pitfalls that have blocked effective use of management data since DP shops became a serious part of business.



The SAS System...

...and you can meet all

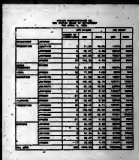
**The SAS System is the one
completely integrated
software solution to meet
your Information Center
needs.**

The SAS Solution for End Users

Four operating staff can use the base SAS® product reports and analysis. Sales representatives can use the database in our SAS/INFORM® product to enter sales and the personnel department can keep the payroll and personnel records.

[illegible]

The Solution for Your Information Center



- ☐ I want to learn more. Send me The SAS Solution packet.
☐ Have a sales representative call me today!

Please complete this coupon or attach your business card.

Name _____
 Title _____
 Company _____
 Address _____
 City _____ State _____ ZIP _____
 Phone (____) _____
 Hardware _____
 Operating System _____

SAS

SAS Institute Inc.
 SAS Campus Drive, Box 8000, Cary, NC 27513-8000

IN DEPTH/MAKING CONNECTIONS

the data can be accessed.

The simplest form accessible from the micro is printed reports or, in DP terminology, "pooled output files." This form is the machine equivalent of what finally ends up as a printed report.

Generally, such a report is easily accessible to the mainframe user because it is the same form that would normally be sent directly to a printer for printout. It is generated from some already existing application program and report-producing program, and there's no additional work to be done by the DP shop. The work involved is more of a logistical problem: getting the data at a spot where the mainframe user can call it up.

A second form in which the data may exist is an internal format or binary format data file. This kind of file may be directly accessed or ac-

There are even a number of cases where the same program spreadsheet exists on different computers and the data formats produced by those spreadsheets are not interchangeable.

cessed through an Isam or Vsam access method intended for use by an applications program running on the mainframe proper.

Typically, it is very hard for an end user to get useful access since having another application written that accesses the data in a different form requires allocation of DP or MIS resources that are usually very scarce. The micro user is probably better off finding an existing application that will produce a report or screen display that can be accessed

via the first means just described.

The third form of data that exists on a mainframe is under a sophisticated data management system, such as National CSS, Inc.'s Nomad, Clincom Systems, Inc.'s Total or Software AG's Adabas. These systems have report generators and nonprocedural languages that allow a fairly unsophisticated end user to write his own applications and tailor the report output to the form he needs.

In a number of cases, the vendors of these packages have already pro-

vided the means to deal with the conversion of mainframe data into micro format. The data is put directly in a form that the micro application can use. An example is VisiCorp's Visi Answer combination to Informatics General Corp.'s system. While a number of these direct connections are becoming available, it should be made clear that these connections are what the micro users like to call "the grand solution." That is, they're very expensive and require a large commitment on the part of DP or MIS to install such a package. Even though the packages may already exist, the likelihood of availability to micro users is probably downstream a bit.

Beast across river

The second step in the micro-to-mainframe link — communications — is the easiest and most readily available. Moving data to the micro from the mainframe is the simplest step in what many vendors would like you to believe is a very simple process.

Communications is the area that has benefited most from improvements in technology because it is basically a hardware-dependent function. A 1,200 bit/sec modem for high-speed communications can be fairly inexpensive. Many computers even come with a built-in 300 bit/sec modem. For a little higher cost, a direct-connect coaxial cable or IBM 3270-like high-speed link is available.

All of these devices allow the micro to emulate a terminal, which the mainframe already expects. The lower cost hardware solutions act as asynchronous or dumb terminals. The more expensive hardware units provide some form of bi-synchronous connection similar to a 3270 terminal or remote job entry terminal. These can either be directly connected with coaxial cable or by a high-speed bi-synchronous modem.

A number of other forms are available that use the variety of local-area networks available for the micro. All of these take advantage of the well-defined communications protocols that exist in the mainframe environment, including Ethernet, IBM's Synchronous Data Link Control or X.25. The necessity for talking between computers has provided a well-documented means for micros to talk to mainframes.

Making data usable

The nature of software applications almost guarantees that any form the data takes will not be correct for the applications package on the personal computer that you want to use. This is true even when some supposedly standard format such as device input format or comma delimited is used. There are even a number of cases where the same program spreadsheet, for example, exists on different computers and the data formats produced by those spreadsheets are not interchangeable.

This could occur for a number of reasons that relate either to the implementation of the packages or differences in the products (number of digits in a number) and the mathematics available on the respective computers. It is usually necessary to manage the data brought from the mainframe and convert it into the form needed by the specific applications package you are using.

This problem also exists within a

"THAT'S A FIVE YEAR RATE ON THE MAINFRAME, WHICH IS ONLY GOOD UNTIL FRIDAY, A THREE YEAR RATE ON THE PERIPHERALS, EXCEPT TERMINALS, A FIXED PURCHASE OPTION ON THE MAINFRAME BUT NOT ON THE TERMINALS, WE'LL NEED THREE SEPARATE MAINTENANCE CONTRACTS, AND NO, WE DON'T DO IBM NON-COMPATIBLES OR SALE-LEASEBACKS, ANY QUESTIONS?"



**IF YOU NEED A COMPUTER TO SORT OUT
YOUR LEASING ALTERNATIVES,
WE HAVE A BETTER IDEA.**



PHOENIX LEASING

A new standard in leasing. Flexibility.

Phoenix Leasing now offers one stop lease shopping for IBM, IBM compatible, and IBM non-compatible computer systems and peripherals.

Configure your own system, and select your own lease plan, with terms ranging from 1-5 years for IBM and IBM compatible equipment and 3-5 years for IBM non-compatible equipment.

If our standard lease plans don't fit you, let us custom design one that does.

Contact Phoenix Leasing today. You'll find you don't need a computer to appreciate our flexible lease terms. We have a better idea for you.

1801 Francisco Blvd.
San Rafael, CA 94901
San Francisco (415) 485-4500
Boston (617) 880-7222
Atlanta (404) 872-3400

IN DEPTH/MAKING CONNECTIONS

single machine when switching from one environment to another or upgrading. For example, to take a spreadsheet output and load it into a word processor as part of a report is usually a relatively simple matter because text files tend to be standard formats.

On the other hand, taking a printed table that was typed as part of a printed report and loading it into that self-same spreadsheet is usually relatively difficult. In many cases, the typist ends up retyping the data rather than using the data that is already on the machine.

Into the package

One would think that once the data is in the format the applications package requires, loading the data is a fairly simple procedure. Often, this is true. The catch is in the phrase "simple procedure." To follow the simple procedure, you must know the simple procedure.

Not all applications packages have paid much attention to describing the "lesser used" features that are necessary to get foreign data into the applications package. It is often necessary for the software that does the data conversion to explain what one would expect to find in the manual of the applications package proper.

Furthermore, loading data into an application, once it is in the proper form, is a more complex process than simply loading something that has already been managed by the application.

A good example of this is a spreadsheet that contains sales histories or sales figures for each group of salesmen in a division. Each month, a new report comes off of the mainframe that shows the sales for the month. The report will typically only contain salesmen who actually have made sales, whereas the spreadsheet for historical studies will show all salesmen.

The step of taking the data of only the salesmen who have actually made sales for the month and putting it into the right rows and skipping the rows for salesmen who have no sales activity is a more complex procedure than simply loading in a straightforward report.

Macro facility

A sophisticated spreadsheet such as Lotus Development Corp.'s 1-2-3 has a macro facility that can be used to accomplish this. In a data base, matching or "join" features can often be used. Once the data is totally and completely available on the personal computer in the right form, the final step of getting it into the applications package in the way that you want it often requires fairly

extensive knowledge of the applications package.

Sometimes it's as simple as a task as requesting the load or merge command and then working within the applications package to tailor the column entries to what you want in terms of data formatting and other niceties to make the spreadsheet or the data base come out properly.

There are a number of approaches that mirror the various solutions in the mainframe-to-micro connection.

They can be categorized as:

- The grand solution.
- The tools approach.
- Programmer for a day.

MS/DP would normally embrace the grand solution. This solution takes a fourth-generation data base such as Adabas, Total or Homad and adds a module that directly allows the personal computer user to download the data in a usable format. Informatica's DB/Answer and Visi Answer are examples of this as

provided to users of Informatica data base products.

Good solution

In an ultimate sense, these communications complements to the data base systems are a good solution to the mainframe-to-micro connection. It's fairly easy to say — although it's not necessarily true — that eventually all corporate users of personal computers will be dealing with one of these grand solutions.

From DP/MS's point of view, the grand solution allows the group to pick an answer that will solve everyone's problems. DP can support one primary product provided by a reliable software house, which they can then install as they installed the data bases with the query language and report generators from the same supplier.

As with all grand solutions, the facts are so simple. In fact, sales of

"HOW LONG DO YOU PLAN ON STAYING WITH OUR COMPANY?"



INTRODUCING THE BUREAUCRACY.
THE MICRO COMPUTER
THAT GROWS WITH YOUR BUSINESS.

Buying a computer is a lot like hiring an employee. You need one that can produce a lot now and even more in the future.

Take the B25. It's modular, so when you need more memory or storage, you simply snap on more modules.

Another feature that allows the B25

to grow with you is its ability to network.

You just add workstations and people will be able to share the same data and memory at the same time.

You can also share peripherals — like printers. Which means several workstations can be linked to one printer so many people can use it.

What's more, the B25 has three operating systems (CP/M-86/MS-DOS/RTU) so you can run the most popular software available today.

And, of course, the B25 is backed by Burroughs' worldwide service and support.

The Burroughs B25. You wouldn't

hire a person who couldn't grow with your business. Why buy a computer that can't?

• NO SURPRISE COMPROMISES

For more information about the B25, mail coupon or call toll free: 1-800-621-3820, CN-1010

Name/Title _____
Company _____
Address _____
City _____
State _____ Zip _____
Telephone _____

Send To: Burroughs Corporation,
Dept. B25, P.O. Box 8994, Chicago, IL 60680

Burroughs
THE QUESTION ISN'T WHO'S BIGGER.
IT'S WHO'S BETTER.

B25 B25 is a trademark of Burroughs Corporation. CP/M-86 is a registered trademark of Digital Research, Inc.

AVOID DOWNTIME! WATER ALERT

FOR COMPUTER AREAS

When you or your machine is in sub-floor wiring area.

• Provides a loud, intermittent alarm when activated by presence of water.
• Completely self-contained... no wiring, no connections.

• Early water detection (1/64" water film activates alarm) provides maximum time for corrective action.

• 24 hour per day monitoring.

• Options include remote indicator, remote flashing light, and automatic telephone dialer.

• Models from \$89 - \$110

Call or write for complete information.

Dorlen Products



products such as Visi Answer have been much slower than anticipated for a number of reasons. The primary one is that for a DP shop to commit to a product of such scope requires a combination of cash resources (most of these packages run in the \$40,000 to \$50,000 range) and political commitment (which, in a large corporation, is often harder to get than the money to pay for the package itself).

Because grand solutions provide direct access into the corporate data base, the problems of data security and data integrity become significant questions that must be resolved before any product can be selected. Furthermore, because each mainframe software supplier provides its own solution, the DP shop has a limited choice. The combination of these factors makes selecting a grand

solution a drawn out process — with political and economic considerations. The many factors involved will stall selection of a package for many installations.

Programmer for a day

In any situation where a problem exists and technically capable people are involved, immediate solutions can be found fairly quickly. With minimal support from the applications packages and from the mainframe end, many individual personal computer users and corporate installations have built bridges that allow limited and very customized access to mainframe data for specific personal computer users.

There are a number of common formats that have allowed this to happen. In particular, Software Arts, Inc., the developers of Visi Calc, have defined the data interchange format, which allows a fairly simple program written in any standard language to produce a data file that can be read into a spreadsheet such as Visi Calc. Similarly, Ashton-Tate's Dbase II and Lotus 1-2-3 have provided import facilities that allow reading standard text files that have quotes around fields and commas between numeric items. This format is a common one produced by the language Basic and used to write many homegrown programs.

As with any customized solution, these solve the problem for a very specific case but require both technical expertise and constant customization for different situations.

Tools approach

One of the most significant factors that first allowed Apple Computer, Inc.'s Apple II and then the IBM Personal Computer to make inroads into a corporate environment is that they are, in a sense, an extended calculator. The individual user has direct and total control over the machine. This control provides a totally different psychological impetus for productivity. This exact factor fights against the mainframe-to-micro user because of the political aspects of reaching mainframe data and, perhaps, corrupting it.

There is, fortunately, a form of the data that comes off the mainframe that most personal computers can access and most mainframes produce. This is the report format (sometimes called the spool file format). It should generally be defined as ASCII text data. The best explanation of this would be a data file on the personal computer that can be typed to the screen and would be completely readable to someone sitting and looking at that screen. There are no special characters in there. It is, in effect, a printed report: it is just not yet printed.

The advantages of a printed report both ways from the MIS side and the user side. The MIS side does not have a problem of data security and data integrity because, for one thing, there is no way for the personal computer users to send data back to the mainframe. Second, from the security point of view, these reports are already being produced in a form to which specific people have access. So there is no change in the availability of data. In other words, the security question has already been addressed.

From the personal computer side, any personal computer user who has been using communications either to



Making the right choice is easier once you understand the difference.

The Loonam difference.

No where else can you find a more complete range of computer products to choose from and at the same time get the kind of help you need to make a knowledgeable purchase. By choosing you have a number of manufacturers' products measure up to your needs, we take the gamble out of choosing equipment.

We help you determine your needs, and then we fill them. We stock one of the largest inventories of equipment. You'll find dozens of well-known products — names like Diablo, those instruments, DEC, Wyse, Egar, PCL and Odata are just a sampling. We offer volume, but we don't sacrifice quality. We're selective, carrying only the most reliable, price competitive, performance-tested products available.



Superior products like the Diablo Series 36 letter quality printer — a good choice when you require unlimited print styles and expansive language capability in a medium speed printer.

Once you've made your choice, we deliver.

With over 24 branch locations through-

out the U.S. and Canada, we can get your order to you without delay. Then we back up what we deliver with single source service by experienced technicians. So if ever you're down, we're there to get you back up and running. With over 16 years of experience behind our name, you know we'll be there when you need us.

LOONAM. We're clearly different.



Corporate Headquarters
7720 Bath Lane Road
Minneapolis, MN 55435

There are 24 Loonam branch offices coast to coast.
Call 1-800-328-4028 for the one nearest you.

SyFA

SYSTEM 2



Would you believe
96 MIPS?



Computer Automation*
Commercial Systems Division

IN DEPTH/MAKING CONNECTIONS

The catch is that a report is not a data file from an applications perspective. No applications program available has the ability to filter out all of the "trash" that makes a report readable for a person, yet has no meaning in an applications environment.

allowed to proceed with the problem at hand without any special or new knowledge.

The further step of having the program automatically decipher as much as it can from the report, before the user gets started in the teach facility, allows the user to expend an absolute minimum amount of effort in pointing out what the user wants to the program.

Once this is done, the user is able to get on with the task at hand and not get

wrapped up in the mechanics of some intermediate requirements that must be accomplished.

The template gives an example of this process. Once the report has been described, this template is now saved. Any report of similar form can use the same template. This requires the user to describe the report only once in detail and then reference what report is to be used without getting involved in specifics.

The final step is for the program to minimize the special aspect of the applications package in giving the result of the translated data. So, in loading 1-2-3, a standard load of what is called file load is used to retrieve the data.

Nothing special needs to be done. When the data comes in, it looks as if it had been loaded in from a normal work sheet. Therefore, any disruption or disturbance of the user's thought patterns in proceeding is minimized.

Which solution?

The choice of a solution is to some degree determined by the amount of effort involved and the immediacy of the requirement. For those who must make a choice they will be stuck with for a long time, all three solutions are potential.

The tools solution is best for those that need an immediate solution today and have few resources. This solution is the easiest and quickest. Little effort is involved other than to buy the products. It is becoming evident that this solution will be the most practical for some time to come because of the extreme cost of the grand solution.

For those with very special requirements, the programming solution can be used. However, one must consider the cost to programmers and the trap of having to maintain a new program and document and properly support it. The problem may best be solved by coming up with a solution that will address the same issues but will utilize the tools approach.

In terms of selecting the actual tools to be used, there are a number of products coming on the market. The standard elements that define good products should be used in selecting the tools in much the same way you selected your applications package.

Review the quality of the product and make sure it meets your requirements. Check the quality of the documentation, and make sure that the availability is what the vendors say it is and that the product has a good reputation.

About the author

Richard Roth has been involved in data processing since 1965 and has worked with micros since 1973. He is vice-president and a principal of Datawise, Inc., a Norwalk, Conn., firm that specializes in data bridges and the application of the technology to move data from one environment to another.

Primarily a software designer, Roth wrote the operating system Cides and was one of the software designers for the Coloco Industries, Inc. Adams.

ELXSI vs. VAX



NOW OR LATER

Unmatched performance, deliverable now, and potential for expansion. That's ELXSI. The ELXSI System 6400 with one CPU has 4 times the performance of the VAX 11/780. Plus you can add up to 5 CPUs in the initial cabinet, and deliver 20 times VAX performance. 10 CPUs in two cabinets. Now. Or later.

The 64-bit multiprocessor System 6400 offers a choice of either EMBOS, our proprietary message-based operating system, or ENIX, our virtual memory UNIX System V operating system. You can choose either one or both. All configurations feature 32, 64, or 80-bit floating point arithmetic hardware, virtual memory, Ethernet link, the largest physical memory in the business, and more.

The ELXSI System 6400. No one can match our performance or our potential. Not now. Not later. Contact ELXSI today for complete information.

ELXSI

ELXSI, 2334 Lundy Place, San Jose, California 95131
408/942-1111, Telex 172320

UNIX is a trademark of Bell Laboratories. Ethernet is a trademark of Xerox Corporation.
VAX is a trademark of Digital Equipment Corporation. EMBOS and ENIX are trademarks of ELXSI.



COMPUTERWORLD





NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 709 FRAMINGHAM, MA 01701

postage will be paid by

CIRCULATION DEPARTMENT

COMPUTERWORLD

375 Cochituate Road, Rte. 30
Box 897
Framingham, MA 01701-9985



COMMUNICATIONS

Nata mounts campaign for higher Centrex prices

By Phil Hirsch
CI Washington Bureau

WASHINGTON, D.C. — A new campaign aimed at increasing the price of Centrex services and eliminating recently added enhancements was announced here last week at the annual convention of the North American Telecommunications Association (Nata).

The association, which represents about 600 independent manufacturers of private branch exchanges (PBX) and related equipment, has been trying for several months to stop the divested Bell operating companies from offering enhanced Centrex services that include functions such as storing and retrieving phone numbers.

The association insists that, under the Federal Communications Commission's (FCC) Second Computer Inquiry decision, these enhancements can be offered by the divested companies only through separate subsidiaries.

Cease and desist order

Shortly after the new campaign was announced, Nata asked the FCC to issue a cease and desist order against Mountain Bell Telephone Co. and Northwestern Bell Telephone Co. Both companies allegedly

are offering Centrex service — a variation of Centrex — directly, on a nonaffiliated basis.

If granted, the order will require the basic portion of Centrex service to be tariffed and offered by the two companies directly, and the enhanced portion to be marketed on a nonaffiliated basis through separate subsidiaries.

Nata also has been unhappy about the pricing of Centrex services, said association President Edwin B. Spiveack at a convention press conference. In a number of states, he contended, Centrex monthly line charges have been reduced to compensate for the access surcharge imposed by the FCC.

Later this month, Spiveack added, Nata will ask the commission to assert federal jurisdiction over Centrex rates.

Having expected growth

In a speech to the conventioners, Spiveack said that from the beginning of 1983 to the end of 1985, 800,000 new Centrex lines will be put in service, cutting in half the expected five-year growth of PBX sales. Sales of key systems will drop 15%, he added.

"These statistics foretell an ominous fu-

ture for the people who built this industry," Spiveack added. "The absence of communications product markets by Centrex — running interactive computer services through telephone company central offices — must be stopped."

Importance of services

The importance of these services is indicated by Nata's annual statistical review of the independent telephone equipment interconnect industry.

One conclusion of this review, which was released at the convention, is that although sales in 1983 rose to record levels, "projections . . . indicate a near-term, potentially sharp slowdown. Continued interconnect growth will depend heavily on innovative new offerings . . . and upgrades of the installed base."

In his prepared address, Spiveack lashed out at both the FCC and U.S. District Court Judge Harold Greene, who is presiding over the antitrust settlement signed by AT&T and the Department of Justice in 1982. Both "loudly extol the benefits of competition as they make policies that effectively limit to a few those who can play the competitive game," he said.

INSIDE

Controllers/79

Voice/Data Communications/79

Protocol

Converters/83

Software/83

Multiplexers/86

Modems/86

Local-Area

Networks/86

Railroads plan fiber-optic net

By Phil Hirsch
CI Washington Bureau

WASHINGTON, D.C. — Plans for a nationwide fiber-optic communications network, which reportedly will transmit digital information at bargain basement rates, were announced here last month by Norfolk Southern Corp. and Santa Fe Southern Pacific Corp., two of the nation's major railroads.

Dubbed Fibertrak, the network will primarily be leased to other communications carriers and made available to end users only on a resale basis. By this time next year, Fibertrak is scheduled to be operational among a number of major cities, including Boston, New York, Philadelphia, Washington, D.C., Chicago, Detroit, Cleveland, Atlanta and Jacksonville, Fla. The total system, which is slated to be completed in 1987, will contain about 5,000 miles of cable and serve an area containing more than 80% of the U.S. population.

At a Sept. 27 press conference, Fibertrak President C. Gus Grant said transmission capacity would be leased in 45M bit/sec increments, each capable of being subdivided initially into 972 voice circuits.

Four separate pricing sets will be offered. The most economical one, Grant said, will reduce the monthly price of a voice-grade circuit to \$3.75 one/mile. Analog long-distance voice circuits typically are priced at \$9 to \$16/mile/mo, he added.

Grant said that all prospective customers have submitted letters of intent to lease Fibertrak, including Satellite Business Systems and the communications common carrier subsidiaries of Lendtel Corp. and Wang Laboratories, Inc.

Grant also said discussions have been held with Western Union and local telephone companies in a number of cities aimed at facilitating network access. He said that in each terminating city, Fibertrak plans to locate its terminations as close as possible to a local carrier's facilities.

AT&T to launch 800 service

WASHINGTON, D.C. — AT&T has requested permission from the Federal Communications Commission to offer what is reportedly the first international toll-free telephone service, beginning Nov. 1. Initially, the 800 service will permit users in France to make toll-free international calls to companies in the U.S. The French telecommunications administration is offering a similar service, "Numero Vert International," that offers toll-free dialing from France to the U.S.

The proposed AT&T service would carry a usage charge of \$95/hour for each line — billable in 6-min increments — plus \$36.80/mo for each domestic access line. A minimum of two such lines would be required. Existing domestic 800 service customers also would pay a \$25/line/mo charge for "country access capability," plus a one-time \$108 service-order fee.

AT&T International 800 service was designed to be "a cost-effective way for American business to operate overseas," said Richard K. Jacobson, AT&T's vice-president for international services. It will give businesses "a presence in foreign nations without having to lease office space

or hire a full-time staff," he said.

In related news, AT&T recently began offering a new "audio/graphics" teleconferencing service said to save customers money by minimizing long-distance charges.

Originally announced in August [CW Aug. 13], the Alliance Teleconferencing Service can be used to interconnect 50 locations through any of four data bridges in Chicago, Dallas, Los Angeles and White Plains, N.Y. Telephones, graphics terminals supporting CCITT Group 4 facsimile standards and data terminals — including personal computers — operating at up to 4.8K bit/sec can be attached to the Alliance network, AT&T said.

Alliance service customers pay the applicable standard toll rate for each circuit connecting a terminal to the bridge, plus 25 cents per minute for each bridge port. The savings depend on the number of terminals located in the same state as the bridge and thus on the number of relayed circuits that can be obtained at intrastate rates, which are generally lower than those for like interstate circuits.

See 800 page 66

ACC package boasts system transparency

SANTA BARBARA, Calif. — Advanced Computer Communications

(ACC) has announced a software package that is said to provide transparent communications in networks of terminals and Digital Equipment Corp. VAX-11 systems running VMS or AT&T's Unix.

According to a vendor spokesman, the Advanced Computer Communications Exchange System (Acces) Network Virtual Terminal Service (VTS) offers a uniform interface for Accis terminals that

does not change due to the host system operating system or terminal characteristics. Incompatibilities between terminals and hosts are resolved by VTS through a translation to a single network terminal format.

Support for other operating systems is said to be under development.

With Acces VTS, the spokesman said, network traffic is minimized through intelligent buffering and flow control. The system is said to

reduce single-character packets and associated overhead substantially.

Using Acces VTS, network users can access a VAX/VMS host or any Unix hosts using a DEC VT100 terminal without using two different sets of control characters.

Source copies of Acces VTS, written in C, are priced at \$25,000 each. The system's binary license fee is \$1,500. ACC is located at 730 Santa Barbara St., Santa Barbara, Calif. 93101.

COMMUNICATIONS

CONTROLLERS

NCR COMTECH, INC.

Comtech IPC

NCR Comtech, Inc. has announced an integrated protocol converter (IPC) for its Comtech 3600 communications processor that enables synchronous Ascl devices to access Binary Synchronous Communications (BSC) or Systems Network Architecture host applications through conversion to 3270 BSC.

The Comtech IPC is said to be a modular programmed hardware interface that can be installed in a local or remote Comtech 3600.

The Comtech controller supports from eight to 32 asynchronous lines. Purchase prices range from \$4,100 for an eight-line version, to \$15,450

for the 32-line version. It is also available for a two-year lease term. Lease prices range from \$296/mo for the eight-line version to \$746/mo for the 32-line version.

NCR Comtech, 8700 Swelling Ave., N. St. Paul, Minn. 55113.

VOICE/DATA
COMMUNICATIONSDIGITAL MICROWAVE CORP.
DMC 23

Digital Microwave Corp. has announced a desktop microwave telecommunications system for linking offices separated by up to 10 miles.

According to the vendor, the DMC 23 enables users to integrate and control computer, voice and private

branch exchange transmissions in their own local-area network at lower cost than traditional underground cable or older microwave systems.

It is said to use less than 10W of power and to include three basic components—a 15.5-lb modem, an 18- or 27-in. dish antenna and a radio frequency unit about the size of a walkie-talkie.

Digital Microwave, 2363 Calle del Mundo, Santa Clara, Calif. 95054.

WANG LABORATORIES, INC.
DVX service

Wang Laboratories, Inc. has announced a voice messaging service that will allow businesses in the New England area to rent voice mailboxes on Wang's Digital Voice Exchange (DVX).

The DVX will run through Wang's

DVX Voice Communication Center time-sharing service in Burlington, Mass., via Wang's toll-free telephone number or a local Burlington number.

Users can create, send, receive, forward or save voice messages by using a few buttons on a Touch-Tone telephone, the vendor said. The service is available 24 hours a day and can be accessed throughout the U.S. and Puerto Rico.

The preliminary contract for the DVX service is for 90 days, with monthly renewal. Users are charged monthly for each mailbox they rent on the following schedule: one to 49 mailboxes, \$35; 50 to 99 mailboxes, \$28; 100 or more mailboxes, \$25.

Wang Laboratories, One Industrial Ave., Lowell, Mass. 01851.

GTE COMMUNICATION
SYSTEMS CORP.

Voice mail enhancements

GTE Communication Systems Corp. has announced a voice mail system for its Omni series of voice and data private branch exchanges. The voice mail system includes hardware mounted inside Omni system cabinets and features non-simultaneous exchange of recorded verbal messages and store-and-forward capabilities.

Voice messages are sent or received through use of standard push-button, dual-tone, multifrequency telephones. The system reportedly will store up to 36 hours of voice messages and will support up to 1,000 users. It also is said to provide voice prompts as user guides for any sequence of five functions: send, receive, reply, redirect and broadcast.

The system reportedly allows non-subscribers as well as subscribers to leave messages.

A typical basic configuration of four ports and 150 mailboxes costs about \$60,000, while a 1,500-mailbox configuration costs about \$300,000.

GTE Communication Systems, 2500 W. Utopia Road, Phoenix, Ariz. 85027.

ETEL, INC.

PNX software

Zetel, Inc. has introduced an office automation package for its Private Network Exchange (PNX) and a system control package said to permit control over single- and multi-site PNX locations.

It has also announced enhanced networking software for the PNX that reportedly allows a company to integrate the switch into existing private networks.

The office automation package is said to offer an on-line directory for PNX's CRT-based attendant console. It reportedly provides components for least-cost networking, enhanced statistics, enhanced station message detail recording and enhanced data options.

Its enhanced networking software provides for tandem calling, least-cost networking, uniform dialing and main/satellite operation, a spokesman said.

Prices for the enhanced networking software range from \$4,000 to \$15,000. Prices for the office automation package range from \$25,000 to \$112,000. Prices for the system control package range from \$0,000 to \$40,000, according to the vendor spokesman.

Etel, Boulderbrook St., Wilmington, Mass. 01897.

If you're reading someone else's Computerworld, cut it out.

☐ Yes Please send me Computerworld for one year at \$39 (that's \$5 off the annual subscription rate of \$44). I understand that my satisfaction is guaranteed and that I may cancel at any time and request a refund on the unused portion of my subscription.

Subscription Form

First Initial Middle Initial Last Name

Your Title

Company Name

Address

City State Zip Code

- ☐ Bill me.
☐ Payment enclosed.
☐ Charge to my credit card.
☐ Amex ☐ BA/Visa ☐ MC

MC Only-List four digits above your name)

Expiration Date

Signature

If you are using a credit card, you can enter your order by calling TOLL-FREE: 1-800-343-8730 (In Massachusetts, call collect: 617-875-0700.)

Address shown in ☐ Home ☐ Business

☐ Check here if you do not wish to receive promotional mail.

Please indicate your business, title, and computer involvement below. Circle one number in categories 1 and 2 and all that apply in Category 3.

1. OCCUPATION/INDUSTRY

1. All Lines
2. Manufacturing (other than computer)
3. Finance/Insurance/Real Estate
4. Retail/Wholesale Trade
5. Government — State/Federal/Local
6. Wholesale/Trade/Trade
7. Business Service (except CP)
8. Government — State/Federal/Local
9. Public Utility/Communication Systems/Transportation
10. Mining/Construction/Processing/Refining
11. Other (Please Specify)

2. COMPUTER INVOLVEMENT

1. Manufacturer of Computers, Computer-Related Systems or Peripherals
2. Computer Service Bureau/Software/Planning/Consulting
3. Computer/Peripherals Distributor/Reseller
4. Other Vendor (Please Specify)

3. OCCUPATION/FUNCTION

11. President/Owner/Partner/General Manager
12. VP/Assistant VP
13. Treasurer/Controller/Financial Officer
21. Director/Manager/Supervisor CP/MS Services
22. Director/Manager of Operations/Planning/Refining, Mfg.
23. Systems Manager/Systems Analyst
24. Manager/Supervisor
25. Programmer/Systems Analyst
26. Data Control, Information Systems Mgmt.
27. Engineering/Computer Aided/Technical Mgmt.
28. Engineering/Software/Systems/Refining/Mfg.
29. Consulting/Management
30. Executive/Assistant/Librarian/Secretary
31. Other (Please Specify)

4. COMPUTER INVOLVEMENT

- Types of equipment with which you are personally involved either as a user, maintainer or consultant (circle all that apply).
1. Mainframes/Minicomputers
 2. Microcomputers/Personal Business Computers
 3. Microcomputers/Workstations
 4. Communications Systems
 5. Office Automation Systems

Satisfaction Guaranteed On Paid Subscription:

I understand that I may cancel my subscription at any time (discontinuing the bonus issues), and request a full refund of the unused portion of my subscription.

Fill in and return to: 375 Coastline Road, Box 897, Framingham, MA 01701

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

GO FOR THE BEST, REGARDLESS OF COST EVEN IF IT'S CHEAPER.



There are some people who wouldn't buy a Rolls Royce for a buck-ninety-five if it didn't come with a hood ornament.

Merely, there are other people, those who purchase things (like computers) because of logic, rather than insecurity.

For those, we offer this chart showing how the Leading Edge Personal Color FXD Computer differs from the IBM® XT, not a self-serving litany of trivial distinctions, but a straight-up comparison of basic things of righteous concern.

After you read it, bear in mind that any consequent action you take requires only admirable lack of cowardice.

	THE LEADING EDGE™ PERSONAL COLOR FXD	THE IBM XT WITH COLOR OPTION
Display	Full color display standard	Color monitor—\$680. Color controller—\$244.
Memory	256K Standard	256K Standard
Speed	7.16 MHz and 4.77 MHz Standard	4.77 MHz Only
Expandability	Expandable to 640K. No additional boards	Expandable to 640K. Must add two boards
Graphics	Capability Standard	With Color Monitor and Color graphic board
Ports	Both Parallel and Serial Standard	Serial Standard, Parallel optional—\$75.
Expansion Slots	7 slots Standard of which 3 remain open after expansion to 640K.	8 slots Standard of which 1 remains open after expansion to 640K.
Warranty	One Full Year parts and labor	90 Days parts and labor
Support	Lifetime no charge toll-free hotline Standard. The best in the industry	None on hardware, software optional at \$50 per call.
Service	Nationwide Service Centers	Nationwide Service Centers
Price	\$3,995 Complete (Standard 10 MB Hard Disk Configuration)	\$5,459 Configured as 10 MB Hard Disk

*As of 9-30-84.

LEADING EDGE COLOR PC: THE GREAT UNKNOWN

LEADING EDGE PRODUCTS, INC.
LEADING EDGE PC AND SYSTEMS DIVISION, 225 TURNPIKE STREET, CANTON, MA 02021 800-343-6833 (617) 828-8150.
FORTUNE DIVISION, 225 TURNPIKE STREET, CANTON, MA 02021 800-354-0754 (617) 828-8150.
SOFTWARE DIVISION, 21 HIGHLAND CIRCLE, NEEDHAM, MA 02454 800-343-3436 (617) 449-4655.

IBM is a registered trademark of International Business Machines Corporation.

THE LIGHTS WILL COME BACK ON. YOUR DATA MAY NOT.

When the power goes down,
so does your computer—maybe
taking your data with it.

If you had last year's sales
figures with next year's projec-
tions on screen, you're going
to be in the dark a long time.

Maybe too long.

Unless you backup your data.

Every day.

No matter what.

The smartest way to do that
is with a Tallgrass HardFile[™]
Mass Storage System.



*Shown above, the 20 megabyte HardFile
with 20 megabyte tape for \$2,995.*

**TALLGRASS SELLS MORE
HARD DISK STORAGE WITH
CARTRIDGE TAPE BACKUP
THAN ANYONE IN THE WORLD.**

Tallgrass took the industry's
most reliable medium—magnetic
tape—and perfected a format
that's become the standard for
personal computers.

We used a removable tape
cartridge to store data out of

harm's way. And made two versions. Our 3000 Series HardFiles combine tape's accuracy with the enormous capacities of hard disk, with 12, 20, 35 or 70 megabytes storage with a removable cartridge tape for backup. Our 4060 tape storage system, for personal computers with hard disks built in, supplies 60 megabytes of backup capacity.

Result: the world's best selling mass storage systems with the most reliable data protection.

And a decidedly enlightened approach to doing business.

For a free brochure, your nearest dealer, and more good reasons to backup, call 1-800-228-DISK.

Before the lights go out.



**TALLGRASS
TECHNOLOGIES**

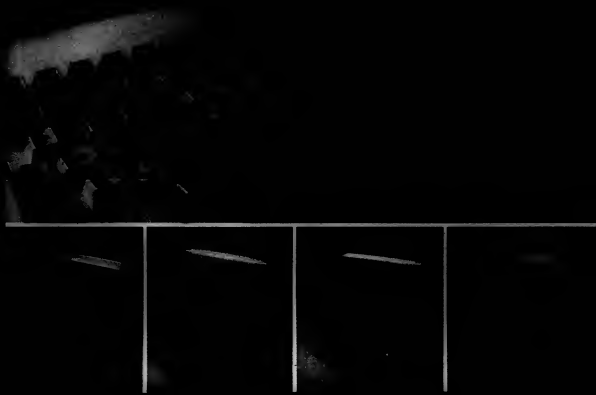
COMMITTED TO MEMORY

HardFile™ and Tallgrass® are trademarks of
Tallgrass Technologies Corporation. © 1989 Tallgrass Technologies.

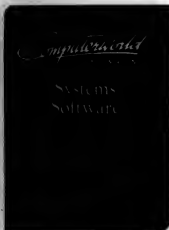
THERE'S NOT ONE REASON
WE'VE SOLD 500,000 TERMINALS.

IT ALL ADDS UP.

A D D S



If you miss the next issue of CW Office Automation, look at the issue you'll miss



December

Coverage includes: the user interface, natural languages, data bases, decision support systems, information centers, and artificial intelligence. Also, we'll highlight user solutions and vendor directions as we consider the current and future benefits of systems software.

Closes: October 26

Call the Sales Office nearest you to reserve space for your ad. Or, if you prefer, fill out the coupon below and return it to: Ed Marecki, National Sales Director, Computerworld, 375 Cochituate Road, Box 880, Framingham MA 01701. Do it today.

Computerworld
OFFICE AUTOMATION

Sales Offices

BOSTON: 375 Cochituate Road, Box 880, Framingham MA 01701, (617) 879-0700
CHICAGO: 2600 South River Road, Suite 304, Des Plaines IL 60018, (312) 827-4433
NEW YORK: Paramus Plaza I, 140 Route 17 North, Paramus NJ 07652, (201) 967-1350
ATLANTA: 1853 Becker Road, Suite D, Atlanta GA 30338, (404) 394-0758
HOUSTON: 8401 Windheim, Suite 110, Houston TX 77063, (713) 950-1220
SAN FRANCISCO: 300 Broadway, Suite 20, San Francisco CA 94133, (415) 421-7130
LOS ANGELES: 18008 Sky Park Circle, Suite 260, Irvine CA 92714, (714) 261-1230

To: Ed Marecki, National Sales Director
Computerworld
375 Cochituate Road, Box 880
Framingham MA 01701

Please send me advertising information on:

- ☐ the Systems Software issue
☐ Please have a sales representative call me.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____



COMMUNICATIONS

Continued from page 83

administrator defines which set of records and data fields a microcomputer has access to, using a combination of begin/end and select/omit rules. The micro user may define which records within that set are needed for an application by specifying a selection criterion, the vendor said.

The DIP support permits mainframe data to be more easily incorporated into microcomputer applications, the vendor said. Transparent data transfers are said to allow microcomputer files to be uploaded or downloaded over Masterlink without concern for file formats.

Prices range from \$2,500 to \$15,000 for a license to attach any number of personal computers to a mainframe.

Performance Software, 455 Southlake Blvd., Richmond, Va. 23113.

DIGITAL COMMUNICATIONS ASSOCIATES, INC. Network Management System

Digital Communications Association, Inc. (DCA) has introduced for the IBM Personal Computer its Network Management System (NMS), said to be an intelligent monitoring device that permits attachment to a DCA Series 300 network processor.

NMS reportedly allows a network manager to exercise centralized network control. It also is said to evaluate network information, signal the network console operator of problems, provide statistical calculations and accumulate transactions for network accounting.

The NMS software resides in the user's IBM Personal Computer or Personal Computer XT, which serves as the central management site for the entire network. NMS costs \$9,995.

Digital Communications Associates, 303 Technology Park, Norcross, Ga. 30092.

MULTIPLEXERS/ MODEMS

TELEBYTE TECHNOLOGY, INC. Modem enhancements

The Remark Datacom Division of Telebyte Technology, Inc. has announced enhancements to its Model 71 and Model 72 short-haul modems. Transmit and receive data LED have been added to simplify installation and diagnostics, the vendor said. The modems also are offered with male or female DB-25-type connectors rather than just male connectors.

The performance of the Model 71 and Model 72 has been upgraded to one mile at 19.2K bit/sec, two miles at 9.6K bit/sec and 10 miles at 1,200 bit/sec, according to the vendor.

The Model 71 costs \$87, and the Model 72 costs \$125.

Telebyte Technology, 148 New York Ave., Hauppauge, N.Y. 11743.

CONCORD DATA SYSTEMS, INC. CD6 224 ARQ

Concord Data Systems, Inc. (CDS) has announced a 2,400 bit/sec full-duplex modem with automatic repeat request (ARQ) error correction.

According to the vendor, the CD6 224 ARQ doubles the data throughput of 1,200 bit/sec modems. The modem reportedly provides end-to-end data transmission over ordinary tele-

phone lines.

The modem was designed for asynchronous data transmission applications and operates at 1,200 to 2,400 bit/sec at full duplex. The ARQ recovery feature uses a bit-synchronous protocol to provide end-to-end transmission and full data transparency.

The modem includes an adaptive equalizer that is said to compensate for telephone line interference. It is available in a tabletop or rack-mount version. Tabletop versions are powered by an external power rack. The rack-mount versions can house up to seven modems and use a standard 19-in. AnsI configuration rack.

The standard CD6 224 ARQ is priced at \$1,285 for single units and \$1,395 with an autodial option.

Concord Data Systems, 305 Bear Hill Road, Waltham, Mass. 02154.

ANCHOR AUTOMATION, INC. Volkmodem 13

Anchor Automation, Inc. has announced its Volkmodem 13, a 300 and 1,200 bit/sec modem designed with autodial and autoanswer capabilities.

It reportedly uses the same cables as the original Volkmodem, which eases upgrading, and can be used on standard, two-wire dial-up networks. It is capable of full, unattended operation in conjunction with stand-alone terminals and computers with RS-232C interfaces, the vendor said.

It is said to feature AT&T 103/212A compatibility; serial command operation; control from any Hayes Microcomputer Products, Inc.-compatible computer program; tone and pulse dialing; dial-tone detect for fast dialing; and busy detection.

Scheduled for availability in mid-November, it costs \$250.

Anchor Automation, 6913 Voljean Ave., Van Nuys, Calif. 91406.

TELEBYTE CORP. Accelerator Series 31

Telebyte Corp. has announced a data compression unit that is said to double data throughput using existing modem and multiplexer equipment.

The Accelerator Series 31 Asynchronous Data Compression Unit reportedly allows an asynchronous terminal to double its throughput over asynchronous or synchronous channels. It supports features such as multiple data rates, autodial and autologin and can interface with buffered devices, including statistical

Continued on page 86



SYSTEMS & PERIPHERALS

TI targets AI markets with Explorer System

AUSTIN, Texas — Texas Instruments, Inc. has announced the Explorer System, a symbolic processing CPU intended for artificial intelligence-based applications. It features the Lisp programming language.

The Explorer System uses TI's NuBus 32-bit architecture and features a 128M-byte virtual address space and from 2M to 16M bytes of main memory. The Explorer uses 140M-byte Winchester disk drives for on-line mass storage and 80M-byte cartridge tape drives for archival storage. The system can accommodate up to 1,120M bytes of on-line disk storage, the company said.

The system console features a 17-in. display with 1,024-by-800-pixel resolution, three-button optical mouse and a keyboard. The fiber-optic link connecting the console to the system unit operates at 68M pixel/sec, the company said. The Explorer System is compatible with local-area networks using the Ethernet interface. The system supports Common Lisp with extensions including the MIT Lisp machine system functions.

The system is available in six configurations with single-quantity prices ranging from \$63,500 to \$66,500, the company said. Shipments are scheduled to begin in April 1985, the company said.

More information is available from Texas Instruments, Data Systems Group, P.O. Box 809053, Dallas, Texas 75380.

IBM unveils add-ons Printer, terminal for mid-range units

By John Deamond
CW Staff

RYE BROOK, N.Y. — IBM recently unveiled a display station and a printer for its line of mid-range computer systems.

Announced were the 5291 Model 2 Display Station, which replaces the IBM Model 1, and the 5252 printer for the 2362 family of steel-band impact printers.

The 5291 Model 2, a member of the 5250 Information Display System, is a smaller, ergonomically enhanced version of the Model 1 that can be used with the System/24, 36 and 38, the company said.

Features of the Model 2 include a screen that can be tilted and rotated, an 83-key low-profile keyboard, 24 command functions and 5-by-9-pixel matrix characters on the display screen. The Model 2 displays up to 1,520 characters in a 24-row by 80-col. format and provides a pedestal-type mount for the display screen.

The Model 2 base unit with video unit measures 15 1/2-in. wide by 17-in. high by 19 1/2-in. deep and weighs 35 lb. Extension cables for the video unit and keyboard are available to reduce the desktop area of the machine.

The price of the Model 2 is \$1,850, the company said. The price of extension cables is \$165. The price of the Model 1 has been cut from \$1,975 to \$1,650, IBM said.

See IBM page 90

■ Honeywell, Inc. will be offering DPS 8 and DPS 88 systems configured with IBM peripherals/80

■ IBM unveils details of experimental voice system/80

■ Tektronix, Inc. has announced a graphics workstation/80

INSIDE

Terminals/91

Printers/Plotters/92

Graphics

Systems/91

Power Supplies/93

Board-Level

Devices/92

Sequoia user cites 'flawless' hardware, software bugs



FIRST USER

By John Deamond
CW Staff

CAMBRIDGE, Mass. — The first user of Sequoia System, Inc.'s large-scale on-line transaction processing system, a commercial software development and software contract research firm here, said it is impressed with the system hardware but has experienced minor problems with Sequoia's AT&T Unix-based operating system.

Donald Eastlake III, manager of computer resources at Computer Corp. of America (CCA) here, said the company obtained a test version of a Sequoia System with two

processing modules, two memory modules and two I/O modules five months ago.

Why did CCA choose Sequoia? "We knew some people there and they were looking for a Unix-oriented test site with sophisticated users," Eastlake said.

CCA, whose main product is a data base management system, concentrates one-third of its business on software contract research. The Sequoia system was employed in the contract work, which had been performed solely by Digital Equipment Corp. VAX-11/780s.

It was not the fault-tolerance or the on-line transaction processing capabilities of the Sequoia System that attracted CCA. "The main reason we were interested was because it supported Unix, was cost-effective and was easy to expand," Eastlake said.

Of the system's performance, Eastlake

said, "The hardware has performed flawlessly; it's really well engineered. I can't say the software has performed flawlessly."

For example, CCA routinely dumps its disk drives to magnetic tape for backup. But the Sequoia software appears to lack an efficient utility for sending data from disk to tape, Eastlake said. Because CCA prefers to wait for delivery of a new version of the software — expected soon — the company has not fully loaded the Sequoia with data so the problem has not been critical. A standard Unix utility is substituting, Eastlake said.

Maximum-stress testing is also being put on hold until the software is updated and more data is put on the system, Eastlake said. "I believe they're reaching their promised [level of] performance right now

See FIRST page 92

UNIX

UNIX operating systems. An ideal has been

If you've been waiting for an ideal operating system, your wait is over. Now there's HP-UX. It is Hewlett-Packard's enhanced version of the industry-standard UNIX operating systems. And it's available right now on a wide range of HP computer systems.

Yes. It's running on our MC68000-based machines

and our powerful 32-bit systems, so you can pick the right computer for the job.

There are extra features such as graphics and networking. Plus there's a growing array of applications software available for you to take advantage of.

And the HP-UX operating system is backed by our full service organization. As with each of our high-powered systems, we're ready to answer questions.

UX

realized.

Working with both end-users and OEMs, we'll find the best solution for any particular application.

Sound interesting? Call your local HP sales office right now about the HP-UX operating system. Or write to Hewlett-Packard, Attn. Pat Welch, Dept. 003194, 19447 Pruneridge Ave., Cupertino, CA 95014. In Eu-

rope, contact Henk van Lammeren, Hewlett-Packard, Nederland B.V., Dept. 003194, P.O. Box 529, 1180 AM Amstelveen, The Netherlands.

Productivity. Not promises.



**HEWLETT
PACKARD**

SYSTEMS & PERIPHERALS

IBM scientists at research center announce experimental speech recognition system

YORKTOWN HEIGHTS, N.Y. — IBM research scientists at the Thomas J. Watson Research Center here have announced an experimental system that recognizes spoken English, allowing human voice input to create letters and memos.

The device is said to recognize sentences composed from a 5,000-word business correspondence vocabulary with greater than 95% accuracy. The system trains itself to recognize a person's voice by listening to the user read a brief text.

According to the vendor, once the system is trained, words, phrases and sentences appear on a worksta-

tion screen as the user speaks into a microphone with a pause between words. The text may be edited by voice or keyboard.

Statistical recognition

The statistical recognition technique is said to function by determining the degree of similarity between the spoken input and the words in the speech recognition system's vocabulary, as well as determining the probability that these words would be in use with the other words in the sentence.

Pronunciation and context are taken into consideration in order that

the speech recognition system can distinguish between homonyms such as "to, too and two" based on the surrounding words, according to the vendor.

Words not stored in the vocabulary can be used by spelling the words out, and new words that are going to be used frequently can be added verbally. An IBM spokesman said the objective is to have the system recognize continuous speech without pauses.

IBM declined to comment on whether the speech recognition system would become commercially available.

Honeywell, IBM sign OEM disk agreement

PHOENIX — By mid-1985, Honeywell, Inc. will be equipping its DPS 8 and DPS 86 mainframes with IBM's 3390 disk drives and 2880 disk controllers.

A spokeswoman said Honeywell signed an OEM agreement with IBM last April but did not publicly announce that the IBM products would be on Honeywell systems until they had been tested. The IBM peripherals are said to operate, without modification, on Honeywell DPS 8 and DPS 86 systems.

The IBM peripherals will be offered as part of standard Honeywell system configurations.

The spokeswoman added that the IBM agreement will not affect Honeywell's relationship with Magnetic Peripherals, Inc., which has supplied Honeywell with peripherals in the past. Honeywell is part owner of Magnetic Peripherals.

For more information, Honeywell can be reached through Box 8006, Phoenix, Ariz. 85022.

Tektronix CAD station out

BEAVERTON, Ore. — Tektronix, Inc. has announced the 490151 Graphics Input Workstation, said to transform documents such as maps into computer-aided design (CAD) data base files.

The workstation includes the Tektronix 4901 Autovectorizer for automatically scanning and vectorizing hard-copy drawings, Graphics Structure Software for transmitting the structured drawing data to the host for CAD data base storage, an M415B Computer Display for local graphics structuring and drawing enhancement functions and a 4967 Graphics Tablet to ease user interaction, the company said.

The 490151 links to a host CPU via an RS-232C interface, and the Host Interfacing Software runs with IBM's Cadam, Computervision Corp.'s Cadde 4X or Tektronix Plot 10 Computer-Aided Drafting Software.

The price of the 490151, to be available in January, is \$150,000.

Tektronix can be reached through P.O. Box 600, Beaverton, Ore. 97007.

IBM from page 87

The 5262 printer emulates the 5256 printer but operates at up to 650 line/min and has a 48-char. set print band, IBM said. The 5262 uses the twin-axial attachment interface to connect the System/34, 36 and 38, as well as the 5284 Remote Control Unit for communicating with a System/36 or 38.

Character sets from 48 characters to a 180-char. multilingual set are available. The purchase price for the 5262 is \$13,500, IBM said.

IBM's National Marketing Division is located at 4111 Northside Pkwy., Atlanta, Ga. 30327.

Enter a Powerful New Age of CICS Performance Management

SYSTEMS & PERIPHERALS

TERMINALS

OLIVETTI CORP.

TMI Series 5000 terminals

Olivetti Corp. has announced three programmable point-of-sale (POS) terminals that incorporate Zilog, Inc. 280 8-bit microprocessors and feature compatibility with Corvus Systems, Inc.'s Omninet local-area network. The terminals will be distributed in the U.S. by Transaction Management, Inc. (TMI) of Lexington, Mass.

The TMI Series 5000 runs on Digital Research, Inc.'s CP/M operating system. The 5000 on the Omninet local-area network can transmit up to 10 bits/sec and uses RS-232C interface, the company said.

The price for a Model 5100 satellite terminal with Omninet option is \$2,905. The Model 5200 with a floppy disk drive and Omninet option costs \$3,545; the Model 5300, a stand-alone POS CPU with a floppy disk drive but no Omninet option, costs \$3,905, the company said.

TMI, 271 Lincoln St., Lexington, Mass. 02173.

TEEM-TRONICS, INC.

Miracle 178P terminal

Term-Tronics, Inc. has announced the Miracle 178P terminal with a printer port for linking an Acclis asynchronous printer with an IBM 3175

compatible terminal.

The 178P features a 19-in. display, a 1,920-char. green phosphor screen, tilt-and-swivel base and an RS-232C interface. The terminal measures 13.7- by 11.5-in. and weighs 36 lb. The price for the Miracle 178P is \$1,145, the company said.

Term-Tronics, 7406 Trade St., San Diego, Calif. 92121.

PRINTERS/PLOTTERS

OUTPUT TECHNOLOGY CORP.

Model OT-700 dot matrix printer

Output Technology Corp. has announced the Model OT-700 dot matrix printer, said to print at 700 or 360 char./sec.

The OT-700 weighs 33 lb. and measures 5.5-in. high by 25.4-in. wide by 15.7-in. deep, the company said. The printer offers Centronics Data Computer Corp.'s parallel interface and RS-232C serial interface.

The unit offers 136-col. carriage width with adjustable sprocket feed tractors. Dot-addressable graphics printing is available.

The price for the OT-700 is \$1,495. Output Technology, Suite 305, 606 110th Ave., Bellevue, Wash.

CONCEPT TECHNOLOGIES, INC.

Concept Laser 8 printer

Concept Technologies, Inc. has an-

nounced the Concept Laser 8 printer, compatible with the Virtual Device Interface recently incorporated by IBM in its graphics products.

The Laser 8 prints text and graphics at 8 page/min and 300 dot/in. and can run on the IBM Personal Computer XT and the Personal Computer AT via the firm's Concept 100 system, the vendor said.

The printer emulates the Tektronix, Inc. 4014 and Diablo Systems, Inc. 630 daisy-wheel printer for letter-quality output.

The price for the Laser 8, available in November, is \$7,995.

Concept Technologies, P.O. Box 5277, Portland, Ore. 97208.

ROLAND DG

DXY-880 X-Y pen plotter

Roland DG has announced the DXY-880 eight-pen intelligent X-Y plotter, featuring Hewlett-Packard Co. Graphics Language emulation and based on the Zilog, Inc. 280 microprocessor.

The DXY-880 can plot on 8 1/2- by 11-in. or 11- by 17-in. paper or acetate. Features include a serial RS-232C interface and a parallel Centronics Data Computer Corp. interface, multi-tape digitizer, 3K-byte buffer, 24K-byte read-only memory, 4K-byte random-access memory, 200mm/sec speed and a selection of international character fonts, according to Roland DG.

The price for the DXY-880 is \$1,295, the company said.

Roland DG, 7800 Dominion Circle, Los Angeles, Calif. 90040.

GRAPHICS SYSTEMS

NEW MEDIA GRAPHICS CORP.

TS-200 High-Resolution Touch Screen

New Media Graphics Corp. has announced the TS-200 High-Resolution Touch Screen for controlling the Graphover 8500 interactive graphics and video system.

The TS-200 is said to offer resolution of 768 by 484 pixels.

The TS-200 can be mounted on any standard television monitor tied to the Graphover 8500, the company said. The 8500 offers either RS-232C or Centronics Data Computer Corp.-type parallel interfaces, the company said.

The price of the TS-200 is \$2,250 in single quantities, the vendor said. New Media Graphics, 273 Cowbridge St., Burlington, Mass. 01803.

CADLINC, INC.

CIM Factory Manager workstation

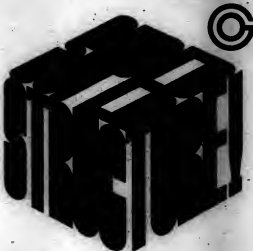
Cadline, Inc. has introduced the Computer-Integrated Manufacturing (CIM) Factory Manager microcomputer workstation for manufacturing companies. The CIM Factory Manager reportedly supports all Cadline software. It has a 50M-byte Winchester disk drive and a 5 1/4-in. floppy disk drive. The system has full AT&T Unix capabilities, including multithreading and multitasking functions.

This workstation is a graphics electronic link that completes CIM. Continued on page 92

Turns Spaghetti Code COBOL Into Structured COBOL Automatically

SUPERSTRUCTURE takes your unstructured COBOL programs and automatically produces structured COBOL programs that are easy to understand and maintain. SUPERSTRUCTURE provides a simple and cost effective alternative to manually rewriting those unstructured programs that are a maintenance nightmare. Of course you can't believe it. Let us prove SUPERSTRUCTURE works, using your programs at your location. SUPERSTRUCTURE—the breakthrough you've been waiting for. Call today: Marketing Director—SUPERSTRUCTURE.

Group Operations, Incorporated
1110 Vermont Avenue, N.W.
Washington, D.C. 20005
(202) 887-5420
Office in Boston, Chicago, Dallas,
Los Angeles, and New York



The Asian Computerworld reaches the fastest growing computer market in the world.

Introducing
The Asian Computerworld

The Asian Computerworld is Computerworld's sister publication covering the South East Asian marketplace. The English language edition keeps company executives, computer users, potential users and people in the computer industry up-to-date.

South East Asia is considered the fastest growing computer market in the world with a total value of \$1.8 billion and annual growth rates for small business systems and micro over 50%. The average annual growth rate is approximately 30%.

The Asian Computerworld, with a total circulation of 10,000, is published in Singapore and printed every alternate Monday. Distribution of the newspaper covers Brunei, Hong Kong, Singapore, the Philippines, Malaysia, Indonesia and Thailand.

CIM International Marketing Services makes it easy for you to advertise in countries all around the computer world. For more information on The Asian Computerworld, just fill out and return the coupon below.

It's free to order



Diana Le Marquis
General Manager
International Marketing Services
CIM COMMUNICATIONS INC.
375 Condit Road
Framingham, MA 01701

Please send me more information on:

☐ The Asian Computerworld ☐ Your other publications.

Name _____
Company _____
Address _____
City _____ State _____ Zip _____

SYSTEMS & PERIPHERALS

Continued from page 51

Workstation, the CIM network. CIM Factory Manager provides graphics preview, full editing, machine tool control and optimization features, as well as data input for management and administration, according to the vendor.

Price of the CIM Factory Manager is \$48,000 with color graphics and \$45,000 with monochrome graphics.

Cudde, 700 Nicholas Blvd., Elk Grove Village, IL 60007.

POWER SUPPLIES

ISORG CORP.

Isoguard UPS

Isorg Corp. has announced the

Isoguard uninterruptible power supply (UPS), said to provide power within plus or minus 2% of correct voltage when the power line voltage deviates by up to 10%.

A sudden 50% load change is eliminated within 25 msec. The Isoguard UPS is said to be capable of tolerating frequency deviations of plus or minus 5% while output frequency remains within 0.25%, Isorg said.

The product's alarm system sounds an audible alarm when utility power is lost and gives a two-minute warning prior to loss of battery power. Other protective features include input and battery circuit breakers, automatic and manual bypass switches and alarm turn-off.

All Isoguard units feature an internal battery pack with 10 minutes of power. The units are rated from 300

VA to 10 kVA in single phase and are available in 60- and 60-Hz versions. The price range for a 60-Hz model is \$1,556 to \$19,800.

Isorg, 410 Great Road, Littleton, Mass. 01460.

BOARD-LEVEL DEVICES

TELAMON, INC.

Network Engine

Telamon, Inc. has announced the Network Engine, said to provide asynchronous terminal throughput and file transfer capability for the Hewlett-Packard Co. HP 3000 series of minicomputers and superminicomputers.

The Network Engine, firmware

that can be installed on the HP 3000, is said to enable any terminal connected to an HP 3000 to dial out and log on to any other system that supports dial-up access without requiring a switch or modem for each terminal. The HP 3000 can transfer data to the remote system and process data received, the company said.

Telamon provides the HP 3000 software required to operate the Network Engine either interactively or through a batch process, the company said. Each Network Engine is said to support two outgoing lines, and its ports are available for incoming calls when not in use for dialing out.

The price of the Network Engine is \$1,400, and the price of the HP 3000 software for the engine is \$2,500. Telamon, 1615 Broadway, 11th Floor, Oakland, Calif. 94612.

FIRST from page 57

in terms of efficiency," the manager said. Despite the problems, Eastlake called the beta software "better than usual."

Although the Sequoia is targeted to the transaction processing market, CCA is using the system the same way as the VAX-11/780s are used. "We think it's certainly roughly equivalent" to the DEC machine and has a lower price, at least in CCA's

experience as a beta site user, Eastlake said.

"But the modular and fault-tolerant capabilities are enough to tip some people in favor of Sequoia, even if compute power is equal," Eastlake commented. He added that CCA intends to keep its DEC equipment, which supports much of the company's software. In the future, "we'd be inclined to expand the Sequoia," Eastlake said.

Would Eastlake recommend the

Sequoia system? "It depends on the user," he said. Sequoia does not replace its software source code. The company wrote its own kernel for AT&T Unix System V and University of California at Berkeley 4.3-compatible versions of Unix. For a company like CCA, which has no need to "play with the software," Eastlake said he would recommend Sequoia.

He said of commercial data processing, "It's not ideal for that kind of outfit today, but with additional

software, I think it will be a respectable competitor."

STANDARD from page 57

other mainframe architecture is so difficult, costly and time-consuming that it can only be considered as a last option. But mainframes are still the most stable group of systems available today. All of the major vendors — IBM, Control Data Corp., Honeywell, Inc., Burroughs Corp., Sperry Corp. and NCR Corp. — have demonstrated long-term commitments to their mainframe architectures and, perhaps more importantly, systems software architectures. Some of those commitments date back almost 30 years.

Obviously a long-term architect-

al commitment is not the key reason that leads one to choose a mainframe over a micro. There is a considerable size and cost difference between the two classes of systems that cannot be ignored. But an interesting dichotomy has developed in the markets for micros and mainframes. It appears that vendors of products based on standardized components and software are not as enthusiastic about providing long-term support to those products as are the makers of a unique product line, such as mainframes.

Some observers contend makers of microcomputers, supermicrocomputers and scientific workstations

are really buying and selling high-tech commodities. They specialize on what will be the hot technology in two years and develop a product based on that technology. If they have guessed accurately, the company will make a great deal of money — but only for a short period of time, until the next hot technology takes over.

Developing systems based on off-the-shelf components clearly has its good and bad points. It has also become a fact of life. The DP executive in charge of buying these systems must realize that he is buying a commodity, not a hedge against obsolescence.

Recommends J Texas Instruments

Texas Instruments 850/855

The 850 and 855 microprinters are the first products in the TI family of high performance Matrix printers. The 850 microprinter features speed (150 CPS), quality printing, and graphics plus PC compatibility. The 855 adds the dual functionality of letter quality print-outs to the 850's impressive list of features. Both are price performance leaders with the same reliability that has made the 8000 804* series printers the standard in offices around the world.

Texas Instruments 787

The newest edition to the Silent 780 series, TTs 787 Portable Data Terminal uses state of the art printing and communications technology to give you all the functions needed to do business in or out of the office.



TI Printers from DIC—The Leader in Peripheral Distribution.

DIC CORPORATION
2700 Hutchinson Parkway
Culver City CA 90230

New York	(212) 780-6802
Atlanta	(404) 526-2823
Chicago	(312) 770-4465
Texas	(713) 541-9611
Colorado	(303) 233-8526
Illinois	(800) 842-1994
California	(415) 254-8910
San Francisco	(415) 227-3410
Los Angeles	(213) 416-8259
Ohio	(614) 251-2000
Indiana	(714) 852-5811
Interstate	
Oakland	(415) 629-1355
	(415) 221-4800



Lease vs Purchase Analyzer

What effect do INTEREST CHARGES have on the cost of ownership?

What are the REAL COSTS of the monthly payments in TODAY'S DOLLARS?

What are the EFFECTS of FEDERAL, STATE, and CITY INCOME TAXES?

What are the BOTTOM LINE effects of ITC, WARRANTY PERIODS, and PERSONAL PROPERTY TAG?

Have you considered the EFFECT of RESIDUAL VALUES? ESTATE SALES TAX? DOWN PAYMENTS?

How does the LEASE TERM affect the lease/purchase decision?

What effect will LEASE EXTENSIONS or RENEWALS have on the acquisition alternatives?

How do DISCOUNTS on LEASE EXTENSIONS or RENEWALS affect your decision?

If you are on lease, SHOULD YOU RENEW ON LEASE? SHOULD YOU PURCHASE? What effect do PURCHASE ACCRUALS have on your decision?

What effect does the ASSET LIFE have on the COST OF OWNERSHIP?



MICROCOMPUTERS

IBM compatibility seen key for laptop microcomputers

By Edward Werner
CW Staff

Last month's arrival of the Data General Corp. Data General/One, a lap-size portable computer that runs nearly all IBM Personal Computer software, coupled with reports that other vendors have similar machines in the wings, has entirely changed the complexion of the 16-bit lap-size computer market, according to industry analysts.

The key issue now is total compatibility with the IBM Personal Computer, said Peter Teige, an analyst with Dataquest, Inc. of San Jose, Calif. Machines that meet that mark will "take off" in sales, while those that do not will "have to fit in some other niche of the market," he said.

George Colony, president of Forrester Research, Inc. of Cambridge, Mass.,

agreed and pegged total shipments of all 16-bit laptop compatibles at 200,000 to 400,000 units in 1984. "That will include [Wang Laboratories, Inc.], DG, IBM and a reworked [Hewlett-Packard Co.] Model 110, he elaborated. Both Wang and IBM will release IBM Personal Computer-compatible laptop models early next year, he predicted. The laptops "must be sold as companions to desktop computers" and will mostly be used by on-the-go executives and salesmen, he said.

By way of contrast, Colony suggested, the total installed base of noncompatible laptop models is not likely to exceed 75,000 to 160,000 units by the end of next year.

That sluggish market is not news to Gavilan Computer Corp., which halted production of its 16-bit laptop unit last

See LAPTOP page 102

Va. firm buys 2,000 DG laptops for field agents

By Edward Werner
CW Staff

RICHMOND, Va. — In what may be the largest single purchase so far of Data General Corp.'s new Data General/One portable computer, Life of Virginia Insurance company (LOV) has bought 2,000 of the 16-bit lap-size machines for use by field agents.

The 9-lb Data General/One computers will be resold at a discount to LOV sales agents, who will use them for fast, custom calculations while working with clients and to communicate with a system of DG microcomputers now being installed at local LOV offices, explained Richard Moschler Jr., vice-president of the insurer's information systems division.

See INSIDE page 102

■ Singer Corp. ships TM/1 decision support software/96

■ Micro Data Base Systems, Inc. enhances its KnowledgeManager integrated package/96

■ Chorus Data Systems, Inc. offers a product that integrates pictures with data bases/96

INSIDE

Software/96

Systems/96

Communications/100

Flood of service firms complicates software selection

By Paul Kormanowski
CW Staff

NEW YORK — So many companies now offer aids for sorting through the plethora of microcomputer software that companies now need help deciding which such service to use.

William L. Cogshall, president of Software Access International, Inc., a market research firm in Mountain View, Calif., made that observation at the seminar "Aids to Selecting Personal Computer Software" at the Information Management Exposition & Conference (Info '84) held here this month.

Cogshall listed approximately 60 software directories, 10 on-line data bases and six evaluation services that claim to help a user locate the software package best suited

to his needs.

Despite the many services and vast amount of money spent on advertising software packages, users most often rely on word of mouth when selecting a package, according to a Software Access survey. Of the business users surveyed, 16% said word of mouth was their principal method of locating a software package. Articles and reviews also led 16% of the respondents to their needed package, the survey reported. Cogshall said store salespeople were no longer a principal source for software leads because only 6% of the respondents cited them as the primary source for leads. "It seems that a lot of people have been burned, so salesmen have lost credibility," Cogshall said.

Limitations to each type of service were

also discussed. Directories often contain outdated material, according to Michael Melin, software publisher at Array, Inc. in Los Angeles.

Melin claimed that ranking packages' effectiveness presents other problems. "When there are 60 IBM Personal Computer word processing packages, how can one differentiate between number 40 and number 60?" Melin asked.

There are seven signs an on-line data base user can commit, according to Richard Spangler, vice-president at International Computer Program in Indianapolis. "Initially, users should realize that there is a significant cost to these services," Spangler said. "If they only plan to use the service once, it cannot be cost justified."

See ARRAY page 106

Broadband net gives IBM micros SNA gateway



The last two installments of this column described IBM's Aug. 14 announcement of PC Network and its basic broadband, CATV technology. This week's column focuses on the Systems Network Architecture (SNA) gateway being provided to link the PC Network to a mainframe SNA network.

The SNA and 3270-based applications are particularly interesting for large organizations. IBM's announcement stated that the primary supporting software, the IBM PC Network Program and the Network Basic Input Output System (Netbios), would be provided for the PC Network and for the "IBM Cabling System using the token-ring protocol," the IBM 3270 Personal Computers attached

to selected models of the same IBM 3270 Display Controller" and the "IBM industrial local-area network using the token-bus protocol."

This means that IBM 3270 Personal Computers will gain a broadband PC Network, a token-ring network, an unspecified, industrial local-area network, and a specialized local-area network.

The 3270 issue was directly confronted in IBM's PC Network announcement with the introduction of the IBM PC Network SNA 3270 Emulation Program. This program for the Personal Computer, Personal Computer XT or the Personal Computer AT "provides communications server capability for IBM Personal Computers on the IBM PC Network with IBM System/370 host applications using SNA 3270 emulation," the announcement stated. The program can also be used outside the PC Network on a stand-alone Personal Computer in order to provide access to IBM System/370 host applications using SNA 3270 emulation, according to the vendor. The program emulates a subset of an IBM 3274 Model 610 controller, a 3278 Model 2 display station, a 3279 Model 32A color display and a 3287 Model 1 printer.

See SNA page 103

Wordstar now \$350; Micropro cuts prices 22% to 60% in series

SAN RAFAEL, Calif. — Micropro International Corp. has cut suggested retail prices for its best-selling Wordstar line of word processing microcomputer software from 22% to 60%.

The price for Wordstar itself has been dropped from \$495 to \$350, while the cost of Wordstar Professional has been reduced from \$695 to \$495, the company said.

The Professional Options Pack has been lowered in price from \$295 to \$195. The cost of Wordstar Professional Plus was cut from \$895 to \$695, while Corrector's price dropped from \$195 to \$145.

Prices for Mailmerge and Spellstar each have been slashed from \$250 to \$99, and the cost of Startrix has been reduced from \$195 to \$99.

Micropro's Telegate electronic mail package will remain priced at \$145, the company said.

Micropro International is located at 33 San Pablo Ave., San Rafael, Calif. 94903.

Madron is manager of computer services at North Texas State University, Denton, Texas.

MICROCOMPUTERS

DEC adds word processor, printer to product line

NEW YORK — Digital Equipment Corp. added its second word processor, the Decmate III, and a letter-quality printer, the Model LQPS3, to its product line.

DEC said that Decmate III was designed as a complement rather than a replacement for the Decmate II word processor. "Professionals might select the Decmate II, while clerical staff would use the lower priced, text-intensive Decmate III," said James Gallagher, manager of the vendor's Decmate Group.

Decmate III is bundled with DEC's word processing software, which includes communications, list processing, sorting and mathematical

features, according to DEC.

The machine is said to include a DEC 6180 Cmos microprocessor, 96K bytes of random-access memory, two 54-in. 400K-byte disk drives and a serial port for a price of \$2,695.

An optional \$395 expansion board, which includes a Zilog, Inc. Z-80 microproces-

sor, allows a user to run programs written for Digital Research, Inc.'s CP/M operating system. Other options include Decspell, a 70,000-word spelling checker, and a modem that supports 300 bit/sec and 1,200 bit/sec transmissions.

DEC's latest product can support communications with other Decmates, DEC

multiterminal systems or external data bases such as Dow Jones Information Services' News Retrieval and MCI Mail, DEC said.

The LQPS3 printer reportedly works at a speed of 35 char./sec in 10-pitch mode and 34 char./sec in 12-pitch mode.

It features a 130-pedal

delaywheel that supports a number of character sets, including prestige, orator, courier, gothic, boldface and scientific.

The printer sells for \$1,395 with an optional sheet feeder priced at \$665 and an optional tractor at \$245.

DEC is located at 146 Main St., Maynard, Mass. 01754.

Forte offers emulator, graphics

SAN JOSE, Calif. — Forte-PJ, an emulator package, has been enhanced to allow an IBM Personal Computer AT to communicate with an IBM mainframe computer, according to Forte Data Systems, Inc. Forte-PJ reportedly also allows IBM 3278 or 3279 terminal emulation and permits users to toggle the standalone mode and a session with the mainframe.

Forte-PJ permits concurrent PC-DOS and mainframe sessions to be supported through use of Quarterdeck Office System, Inc.'s Desq windowing package.

The supplier also offers Forte-Graph, an on-line graphics package for the Personal Computer AT. Forte-Graph reportedly converts the micro into a full-function, color graphics workstation.

Forte-PJ is priced at \$1,195. Forte-Graph is priced at \$1,295.

Forte Data Systems is at 2205 Fortune Drive, San Jose, Calif. 95131.

**IBM/38-36
INFO CENTER.
TODAY!**



Call or write
for details on
FUSION's

Information Center.
Includes integrated retrieval
processor (report/queries),
personal database and IBM
PC Interface.

FUSION

POWER PRODUCTS INC.

(415) 461-4700

80 LARKSPUR L.C. AVE.

LARKSPUR, CA 94550

TELEX 00888



MICROCOMPUTERS

Sinper releases decision support package

NEW YORK — Sinper Corp. has shipped Tables Manager/1 (TM/1), a decision support software package that reportedly enables managers to access, manipulate and analyze a tabular data base with user-designed multidimensional tables.

TM/1, the supplier's first product, runs on the IBM Personal Computer, Personal Computer XT and Compaq Computer Corp. microcomputers. The tables manager is said to have the features of an electronic spreadsheet with integrated graphics and a relational data base manager in a single system, permitting custom analysis of a single tabular data base.

"TM/1 differs from spreadsheets and relational data base managers because it operates from a tabular data base structure geared toward planning and analysis rather than simple record keeping," according to Sinper Chairman Joe Sinai.

Data storage is limited by the capacity of the floppy or hard disk, but the software employs a virtual memory to provide extra capacity, the company said. Data from mainframe programs reportedly can be downloaded for microcomputer access.

The price of TM/1 is \$795. Minimum requirements are 192K bytes of internal memory and IBM's PC-DOS 2.0 operating system.

Sinper is located at 14 W. 40th St., New York, N.Y. 10018 and 150 N.E. 9th St., Miami, Fla. 33132.

Integrated package out for micros

LAFAYETTE, Ind. — Micro Data Base Systems, Inc. (MDBS) has enhanced KnowledgeMan, an integrated package that runs on the IBM Personal Computer and a number of other microcomputers.

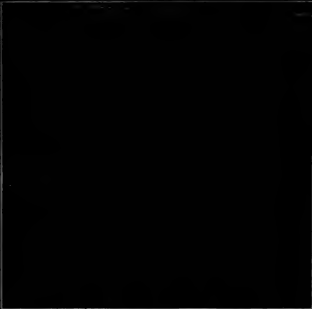
KnowledgeMan reportedly integrates a spreadsheet, ad hoc inquiry, statistical analysis, printed forms management, screen management, structured programming language and a relational data base manager. Optional modules are said to provide graphics, forms painting and text processing capabilities.

The enhancements consist of on-line Help facilities and a language learning feature that enables the product to understand a user's terminology, the vendor said.

In addition to the IBM Personal Computer, the product runs on Texas Instruments, Inc.'s Professional, Wang Laboratories, Inc.'s Professional and Digital Equipment Corp.'s Rainbow microcomputers with either Microsoft's MS-DOS or Digital Research, Inc.'s CP/M-86 operating systems.

KnowledgeMan is priced at \$500.

MDBS is located at P.O. Box 248, Lafayette, Ind. 47902.



SEE LANIER.

FOR YOUR INFORMATION,
WE'RE NOW PART OF HARRIS.

NAMEWARE

- ADDS**
Stamford, CT
Video/data telephones
(Formerly Digital Transactions)
- COMBAC**
Ottawa, ONT
Business/financial software
(Formerly Quasar Systems)
- COMWING**
Houston, TX
Portable computers
(Formerly Gateway Technology)
- DATAWING**
New York, NY
Computer stores
(New venture of IBM)
- DEVELOP**
Costa Mesa, CA
Software for IBM PC
(Formerly Gateway Software)
- DISCOS**
San Francisco, CA
Computer supplies
(New venture of Crown/Zellerbach)
- EMPOCAL**
Washington, D.C.
Microcomputer applications
(Formerly LCI Systems)
- EMPOWER**
Tulanyville, CA
Home computers
(Formerly B-W Computers)
- EMPOWER**
San Diego, CA
Software transactions systems
(Formerly Publishing Technology)

BY NAMELAB®

Contact us for free booklets on product and company name development.

NAMELAB INC.
Name Development & Trading Laboratory
781 Marina Boulevard
San Francisco, CA 94123 • 415-563-6379

MICROCOMPUTERS

SOFTWARE

ALPHA SOFTWARE CORP.

Data Base Manager II — Integrator Release 2.0

Alpha Software Corp. has announced enhancement of its Data Base Manager II — The Integrator software for the IBM Personal Computer and Personal Computer XT. Wang Laboratories, Inc.'s Personal Computer and the Texas Instruments, Inc.'s Professional.

The software, Release 2.0, reportedly includes an AlphaKey function that permits users to create keyboard macros that reduce to one the number of keystrokes needed to perform a function. AlphaKey also allows users to create and store a description of each macro, according to the vendor.

The enhancements are said to include the ability to summarize a data base, even on more than one field. Release 2.0 also provides the ability to create up to 26 customized data input screens, to automatically delete duplicate records and to support color monitors, Alpha said.

Version 2.0 is priced at \$295. Alpha Software, 30 B St., Burlington, Mass. 01803.

LIVING VIDEOTEXT, INC.

Thinktank for Data General/One

Living Videotext, Inc. has announced a version of its Thinktank outlining program for the Data General Corp. Data General/One portable microcomputer.

Thinktank, an outline generator for strategists and planners, reportedly permits the generation of outlines including main topics and sub-topics. It is also said to provide users with the ability to expand and collapse portions of the outline and to insert text.

Thinktank on the Data General/One is said to be menu-driven and to require a minimum of 256K bytes of memory and at least one double-sided quad-density diskette drive.

Thinktank is priced at \$195. Living Videotext, 2432 Charleston Road, Mountain View, Calif. 94043.

DATA GENERAL CORP.

Overhead Express for Data General/One

Data General Corp.'s Desktop division has announced it will offer Business & Professional Software, Inc.'s Overhead Express presentation graphic software for the Data General/One personal computer.

Overhead Express allows users to prepare near-typeset-quality transparencies or foils using a personal computer. Overhead Express is available on a 3½-in. diskette for the Data General/One.

The product reportedly includes 12 fill-in-the-blank templates that follow common business formats, including title pages, budgets, tables and outlines. Templates can also be customized, new templates can be created or pages can be designed directly without the use of a template, the vendor said.

Overhead Express lettering includes five type sizes and four standard typefaces.

The product is available for \$195. Data General Desktop Division, 4400 Computer Drive, Westboro, Mass. 01580.

APPLIED DIGITAL DATA SYSTEMS, INC.

Protege

Applied Digital Data Systems, Inc. (Addis) has announced Protege, a three-utility program that runs on the Addis M1000 workstation.

Protege's terminal emulator package allows the M1000 to be used as a programmed function terminal with the Addis Mentor multiterminal system, according to the vendor. A file transfer facility reportedly allows a user to send personal computer files to the M1000 workstation.

A configuration feature allows users to set parameters of the system, the vendor said.

Protege costs \$250. Addis Systems Division, 100 Nurser Blvd., Hauppauge, N.Y. 11788.

See TOOLS page 97

Chorus offers Photobase

MERRIMACK, N.H. — A product that merges pictures with a data base system for use in applications from personnel files to real estate listings and product catalogs has been introduced by Chorus Data Systems, Inc. for the IBM Personal Computer and Personal Computer XT.

The product, Photobase, is said to be an operating system extension for use with the micro in conjunction with a data base system, such as Ashton-Tate's dBase II or the IBM Filing Assistant. Images are stored on a video cassette recorder and are captured using the Photobase Image Manager software and its PC-Eye Video Capture System, a video surveillance camera.

Pictures are said to be stored in black and white with 320- by 200-pixel resolution and 16 levels of gray. Each picture reportedly requires 256K bytes of storage capacity. The Photobase system is said to interact with any data base system for microcomputers that writes to the display using the computer's basic I/O system.

Photobase reportedly requires a high-resolution graphics adapter and composite monochrome monitor.

Photobase, with the PC-Eye Video Capture System, is priced at \$690. The GA-1 graphics display adapter is priced at \$695.

Chorus Data Systems is located at 6 Continental Blvd., P.O. Box 370, Merrimack, N.H. 03054.

Introducing the
smartest tools ever created
for the business mind.

The Smart
Software System.

Smart Software, featuring The Smart Spreadsheet with Graphics, The Smart Word Processor and The Smart Data Manager, is the first software system with the unique intelligence and inherent logic to perform the way you think. Which makes applying the power of a computer to business tasks more effortless and effective than ever before.

It's a wonderfully powerful, yet amazingly simple. And with its greatly advanced and unprecedented capabilities, it sets new standards by which all other integrated business software will be measured.

ACHIEVING FULL INFORMATION WITHOUT COMPROMISE

Unlike all-in-one integrated packages, Smart Software is structured on the concept of modular integration. Where each dedicated application can achieve its own maximum

potential. So you get the full power and features of dedicated software in an integrated system.

Each application module maintains its own data structure. Yet all are capable of transferring data, passing commands and sharing information automatically.

This unique system of integration also allows for multiple windows; relational files, documents and spreadsheets in memory at once; graphics printed within text; external data interfaces, and open-ended application development.

It's a system of integration without compromise. Integration that is not only better, it's smarter.



MICROCOMPUTERS

TOOLS

from page 96

PARALLEL COMPUTERS, INC.
Offware

Parallel Computers, Inc. has announced an integrated office automation software program that is an addition to its Parallel 300 computer system running under AT&T's Unix operating system. Offware resides on the Parallel 300 and shares processing with the Parallel 300 and up to 32 attached microcomputers, such as IBM's Personal Computer running under IBM's PC-DOS.

The program integrates word processing, spreadsheet, graphics, forms data entry, calendar and electronic mail capabilities. Offware downloads stand-alone tasks as needed to the microcomputer. It provides win-

dows that allow a user to see and manipulate several pieces of work, the vendor said.

Offware costs \$1,600 per microcomputer.

Parallel Computers, 3004 Mission St., Santa Cruz, Calif. 95060.

LATTICE, INC.
Dbc Library enhancements

Lattice, Inc. has announced enhancements to its Dbc Library, a software tool kit that reportedly allows programs written in the C language to access Ashton-Tate's Dbase II and Dbase III files running under Microsoft Corp.'s MS-DOS and other operating systems.

The Dbc Library reportedly also can act as an indexed file system. Twenty functions are said to be provided to create, access, update and

extend data bases. It also runs on Digital Research, Inc.'s CP/M and CP/M 86, AT&T's Unix and IBM's PC-DOS operating systems, Lattice said.

Dbc Library can be used to extend existing Dbase applications or to write a complete application, according to the vendor.

Dbc Library is priced at \$250. Lattice, P.O. Box 3077, Glen Ellyn, Ill. 60138.

INDEX TECHNOLOGY CORP.
Excelerator

Index Technology Corp. has introduced a version of its Excelerator software design tool for the IBM Personal Computer AT.

Excelerator is said to be an integrated package that allows systems analysts to expedite time-consuming manual tasks, including developing

and revising data flow diagrams, structure charts, data model diagrams and other components of the systems specification document.

The product also provides extensive graphics, data dictionary and word processing capabilities. Index Technology said it reportedly can design enterprise models, screen definitions and report layouts, among other design features.

Excelerator is priced at \$9,000. Index Technology, Cambridge Center, Cambridge, Mass. 02142.

SOFLABS
Res

Soflabs has introduced its Res program residency manager, software that reportedly allows users to make other programs resident and to reassign keyboard keys to character strings. The package operates on the IBM Personal Computer and Personal Computer XT.

Res is said to allow up to nine programs to be made concurrently resident and up to 66 keyboard keys to be redefined.

Users can configure copies of Res to create program-integrated operating environments automatically for specific applications like word processing, Soflabs said.

Res is priced at \$60 without keyboard key redefinition and \$120 with keyboard key redefinition.

Soflabs, Suite 304, 400 E. Anderson Lane, Austin, Texas 78756.

PEROX MICROSYSTEMS, INC.
Data Trader

Perox Microsystems, Inc. has announced a software utility product that allows users to move data from mainframe files into the Lotus Development Corp. 1-2-3 spreadsheet program or the vendor's Encore financial planning software program, running on the IBM Personal Computer and compatible machines.

Running on the UCSD P-system, Data Trader reportedly allows the user to gain access to mainframe data for work on personal computers. It also allows data developed on 1-2-3 to be used in Encore, according to Perox.

Data Trader sells for \$125. It does not contain communications software.

Perox Microsystems, 1701 N. Pl. Myer Drive, Arlington, Va. 22209.

INFOTM
International Fixed Asset Accounting

Infotm, a division of the McDonnell Douglas Information Systems Group, has announced the International Fixed Asset Accounting (Ifaa) package for the IBM Personal Computer and compatibles.

Ifaa is said to provide automated fixed-asset accounting for international businesses. Ifaa reportedly provides calculations for every depreciation method used in the U.S. and includes a depreciation module that can be programmed to meet local requirements. Ifaa also supports either a monthly accounting period or the four-four-five accounting period. The system automatically produces 12 reports.

Ifaa is scheduled for shipment in November and is priced at \$1,500.

Infotm, 30375 Valley Green Drive, Cupertino, Calif. 95014.

See YOURS page 98

CREATING CUSTOM
APPLICATIONS BY
SMART MENU SELECTION

Perhaps the most significant aspect of Smart Software is its unique "project processing" capability. It allows the user to set up customized projects, like a monthly sales report system or multi-year business plans, simply by doing them once.

There's no need to learn a complex programming language. The user merely makes simple English command selections. Smart Software then remembers to complete the project in the same way again at the touch of a button. Not by memorizing keystrokes (like a macro), but by automatically learning your custom sequence of commands and freely adjusting to changes and edits.

No other integrated system has a capability that even comes close to Smart Software's project processing.

HELPING PEOPLE
TO WORK SMARTER,
NOT HARDER

Smart Software was created to work for you, relentlessly. Structured to integrate between applications, automatically. And designed to perform multifaceted business projects, brilliantly.

See your local computer dealer for a demonstration, and ask about the special upgrade offer currently available for Lotus 1-2-3, WordStar, or dBase III+ users who want to work smarter.



The Smart Software System
INNOVATIVE

Smart Software is available on the IBM PC/XT and compatibles. For more information, or to order a smart demonstration disk, or call 800-GET-SMART.

Smart Software is available on the IBM PC/XT and compatibles. For more information, or to order a smart demonstration disk, or call 800-GET-SMART.

Smart Software is available on the IBM PC/XT and compatibles. For more information, or to order a smart demonstration disk, or call 800-GET-SMART.

MICROCOMPUTERS

TOOLS from page 97

STRATEGIC SOFTWARE
PLANNING CORP.
Promis

Strategic Software Planning Corp. has introduced a MicroSoft Corp. MS-DOS version of its Promis project management software for project tracking, planning, resource management and cost control.

The Promis software runs on the IBM Personal Computer XT and reportedly uses a data base architecture.

The product is said to be menu-driven and to offer report writing capabilities along with interactive data entry and batch entry facilities.

Promis is also said to offer on-screen, zoomable presentation graphs

and multilevel password protection.

Promis is priced at \$2,995. Strategic Software Planning, 229 Third St., Cambridge, Mass. 02142.

MICRO FOCUS, INC.
CO-Graphics

Micro Focus, Inc. has announced a Graphics Interface package that enables programmers to generate graphics directly from Cobol programs processed on IBM Personal Computers, Personal Computer XTs and Personal Computer ATs running under IBM's PC-DOS Versions 2.0, 2.1 and 3.0. CO-Graphics is a Graphics Software Systems, Inc. (GSS)-based interface to Micro Focus' high-performance Level II Cobol compilers.

CO-Graphics reportedly provides the Cobol programmer access to the

GSS graphics routines, which are based on the virtual device interface standard. The programmer can write business graphics applications that produce graphs and charts with data read directly from conventional Cobol data records without programming the hardware-specific systems interfaces, the vendor said.

CO-Graphics will be available in fourth-quarter 1984. The price is \$250 per single license.

Micro Focus, Suite 400, 2465 E. Bayshore Road, Palo Alto, Calif. 94303.

SOFTSTYLE, INC.
Printworks

Softstyle, Inc. has announced Printworks, a utility that reportedly allows an IBM Personal Computer to work with 90 types of dot matrix

printers.

Printworks' menu selection is said to provide various print modes and characteristics, such as special fonts, custom font editors and lengthwise rotated printing, according to Softstyle.

Printworks works with printers from Epson America, Inc., Olivetti Corp. and C. Itoh Electronics, Inc.

Softstyle, Suite 205, 7188 Enclenque Highway, Honolulu, Hawaii 96825.

LEXISOFT, INC.
Spellbinder enhancements

Lexisoft, Inc. has reportedly enhanced Spellbinder, a word processing package, to drive Hewlett-Packard Co. Laserjet and Inkjet printers. Spellbinder reportedly features justification of type, true proportional spacing, boldfacing, shadow printing and italics. On the Laserjet, the product supports five on-line proportional fonts, according to Lexisoft.

Spellbinder runs under a number of operating systems, including Microsoft Corp.'s MS-DOS, Digital Research, Inc.'s CP/M 80, CP/M 86, Concurrent CP/M, MP/M, MP/M 86 and Phase One Systems, Inc.'s Oasis.

Spellbinder costs \$495. Lexisoft, Box 1378, Davis, Calif. 95617.

FISCHER-INNIS SYSTEMS CORP.
Watchdog enhancements

Fischer-Innis Systems Corp. has enhanced Watchdog, a software security package for IBM Personal Computer XTs and ATs.

Watchdog organizes programs and files into directories called areas, which are displayed on an area menu, according to the vendor. Security features display only those files that a user is authorized to use.

This release reportedly features a screen design that places menu selections side by side with a list of function key operations to ease user operation. Another enhancement allows users to encrypt backup files and restore them whenever needed, according to the vendor.

Watchdog costs \$295. Fischer-Innis Systems, 4175 Merchandise Ave., Naples, Fla. 33942.

SYSTEMS

STAR TECHNOLOGIES, INC.
Star PC

Star Technologies, Inc. has introduced a microcomputer that is said to be designed for office automation use and to offer compatibility with the IBM Personal Computer.

The Star PC comes standard with one RS-232 interface and a parallel interface.

The Intel Corp. 8088 microprocessor-based microcomputer is available with up to 266K bytes of random-access memory and Winchester storage in capacities of 11M, 22M or 44M bytes.

The price for a unit with 128K bytes of memory, a 12-in. monochrome monitor, two floppy disk drives, parallel and serial ports and Microsoft Corp.'s MS-DOS operating system is \$2,500, according to the vendor.

Star Technologies, 5 Studebaker, Irvine, Calif. 92718.

MICRO-TERM
Introduces the New

ERGO 4000

A 66-Line
Word Processing
Terminal
for Only
\$1195

Quantity Discounts Available

ERGO 4000 is a word processing terminal that is designed to run on the IBM PC-DOS 2.0, 2.1 and 3.0 operating systems. It features a 66-line display, a keyboard with function keys, and a built-in printer. The terminal is designed to be used with the Micro-Term 4000 software package, which is available for purchase or rental.

ERGO 4000 is a word processing terminal that is designed to run on the IBM PC-DOS 2.0, 2.1 and 3.0 operating systems. It features a 66-line display, a keyboard with function keys, and a built-in printer.

IBM PC-DOS 2.0	Saturn
IBM PC-DOS 2.1	Spinnaker
IBM PC-DOS 3.0	SuperVUE
IBM PC-DOS 3.0	WordStar
IBM PC-DOS 3.0	Text

For more information, contact your local Micro-Term distributor or write to: Micro-Term, Inc., 117 Rudder Road, Princeton, NJ 08540.

Micro-Term, Inc. is our only product, and we put more into them.

Micro-Term, Inc. is our only product, and we put more into them.

Micro-Term, Inc. is our only product, and we put more into them.

Micro-Term, Inc. is our only product, and we put more into them.

MICROCOMPUTERS

RECOGNITION
EQUIPMENT, INC.Tartan CX; Tartan Personal
Computer; Tartan Link

Recognition Equipment, Inc. has announced the Tartan CX data entry system, the Tartan Personal Computer and the Tartan Link software, said to allow the company's personal computer or any IBM Personal Computer-compatible micro to operate in several modes.

Each Tartan CX system is said to support 16 devices, including terminals, printers, disks and communications interfaces. The system contains 194M bytes of fixed storage and 25M bytes of removable disk storage. The price for the system, including four workstations, a synchronous communications interface and software, is \$29,995, the company said.

The Tartan Personal Computer includes a 16-bit microprocessor with 128K bytes of memory (expandable to 512K bytes), two 5¼-in., 360K-byte floppy disk drives, two serial I/O ports and a 14-in. monitor. The Tartan micro

with a 128K-byte main memory, a 64K-byte Tartan processor to interface to the Tartan network and Tartan Link software costs \$4,950, the company said.

Tartan Link software is said to allow IBM Personal Computer compatibles to emulate Tartan terminals. The price of a package to link other IBM-compatible personal computers, including the 64K-byte Tartan processor and Tartan Link software, is \$1,750.

All Tartan products use the company's proprietary operating system.

Recognition Equipment,
P.O. Box 600804, Dallas,
Texas 75266.

SMOKE SIGNAL
VAR/86K

Smoke Signal has introduced its line of 32-bit, Unix-based microcomputers, the VAR/86K desktop systems for value-added resellers and end users.

The systems, which reportedly incorporate the Motorola, Inc. 68008 microprocessor, are said to offer

flexibility for multiple users who need only acquire a single image of any shared program. Applications and data are reportedly swapped automatically, between memory and disk to allow users to run programs that would otherwise exceed available random-access memory.

In its minimum configuration, a VAR/86K system consists of a single terminal with keyboard, 1M byte of flexible disk, 6M bytes of hard disk, eight RS-232 serial ports, a Centronics Data Computer Corp.-type parallel port and the Regulus operating system from Alcyon Corp.

VAR/86K systems are priced from \$7,900 to \$25,000.

Smoke Signal, 31336 Via
Cobana, Westlake Village,
Calif. 91362.

UNIVERSAL
INTERGRAPHIC CORP.
3-D Graphics Cadd System

Universal Intergraphic has introduced its 3-D Graphics Cadd System for the IBM Personal Computer, Personal Computer XT and

Personal Computer AT.

The 3-D Graphics Cadd System is said to be an interactive, three-dimensional, computer-aided design and drafting (Cadd) product that can image and model technical graphics, production drafting, animation and slide shows.

Other reported functions are color selection per vector, menu operation, two- and three-dimensional editing, math functions, graphics word processing and graphics generation with hidden lines removed. Additionally, it is said to offer real-time viewing from any angle and to provide plan, perspective and multiple views.

The 3-D Graphics Cadd System software is priced at \$1,995. A complete turnkey system, including Personal Computer AT, mouse, digitizer, plotter and 19-in. monitor, is priced at \$21,950.

Universal Intergraphic,
Suite 104, 2800 E. G St., Ontario,
Calif. 91764.

ALPHA MICROSYSTEMS,
INC.

Alpha Microsystems, Inc. has announced Entry-Level System (ELS), a one- to three-user microcomputer reportedly capable of running two operating systems.

ELS uses an Intel Corp. 8088 microprocessor to run Microsoft Corp. MS-DOS operating system programs and provides 256K bytes, expandable to 640K bytes, of random-access memory (RAM) for those applications. Alpha Microsystems said.

A Motorola, Inc. 68000 microprocessor is used to run the unit's proprietary Amos operating system and supplies 128K bytes of RAM, reportedly expandable to 256K bytes. Files created under one operating system can re-

portedly be transferred to the other operating system.

ELS includes a 10M-byte hard disk, 360K-byte floppy disk drive, monochrome or video monitor, controller, keyboard, battery-backed clock and calendar, a serial port and a parallel port.

The price for ELS is \$6,870.

Alpha Microsystems,
17322 Via Karman Ave., Irvine,
Calif. 92714.

ESPIRIT COMPUTER
PRODUCTS, INC.

Esprit Computer Products, Inc. has enhanced its DBS 16 multuser supermicrocomputer to store 105M bytes of data.

The product supports up to 32 users while using network-in-a-box architecture featuring an Intel Corp. 80186 microprocessor, according to Esprit Computer Products. DBS 16 features an 820K-byte floppy disk drive and runs Digital Research, Inc.'s MP/M 96 or Concurrent DOS 3.1 operating systems, the vendor said. The 105M-byte drive reportedly has an average access time of 30 msec.

DBS 16 with 105M bytes of storage costs \$12,995. Esprit Computer Products, P.O. Box 425, Welsh Road & Park Drive, Montgomeryville, Pa. 18936.

REXON BUSINESS
MACHINES CORP.
RX460

Rexon Business Machines Corp. has announced the RX460 multuser CPU system based on the Intel Corp. 8086 microprocessor and said to support up to 32 terminals, local or remote, and up to four parallel-interface printers. The system runs Rexon's Recap operating system.

Continued on page 108

MicroAge®

"THEY GAVE US
THE COMPETITIVE EDGE!"

"Since opening our Orland Park store in 1981, we've doubled our square footage and are opening a second store in Oak Lawn; it's MicroAge's 100th store. MicroAge showed us how to develop a professional atmosphere, build a knowledgeable sales force, and provide the technical assistance needed to reach small to mid-size businesses in the Chicago suburbs."

"MicroAge is the franchise organization you like to have supporting you because they maintain high professional standards. With MicroAge, we've gained the type of reputation that brings referrals from satisfied customers."

"If we had to do it all over again, we'd do it with MicroAge!"

Gary H. Vogel
Franchise Owner

Gary H. Vogel
Franchise Owner

Garrett H. Vogel
Franchise Owner

Garrett H. Vogel
Franchise Owner

To build your own professional computer sales organization with MicroAge requires an initial investment of \$200,000 to \$300,000 which includes \$80,000 in liquid assets. Write us:

MicroAge®
COMPUTER STORES
"The Solution Store"

1457 West Alameda • Tempe, Arizona 85281
(602) 968-3168

ON-LINE
HP3000 & DEC VAX
BUSINESS MANAGEMENT

- C PAYROLL
- C PERSONNEL
- C ADVANCED GENERAL
- C ACCOUNTS PAYABLE
- C ACCOUNTS RECEIVABLE
- C FIXED ASSETS

SUPPORT MULTITASKING SHARED PRINT

RELIABLE

MICROCOMPUTERS

Continued from page 99

The system is said to provide up to 250M bytes of Winchester disk storage, a 14-in. streaming cartridge tape unit and up to 800K bytes of main memory.

The unit consists of the main system and an expansion unit.

The RX460 comes in two models, both reportedly expandable to a maximum of 32 serial ports and four parallel ports. The price of Model 190-B2, with 256K bytes of main memory, 56M bytes of disk storage, two subordinate processors, two parallel printer ports and eight serial ports, is \$32,160. The price of Model 190-B3, identical to the B2 except for 140M bytes of disk storage, is \$37,560, Razon said.

Razon Business Machines, 5300 Uplander Way, Culver City, Calif. 90230.

COMMUNICATIONS

AT&T

Model 4000

AT&T has announced Model 4000, an intelligent, programmable modem that uses an RS-232C port and works with a number of microcomputers, including the ATAT 4300 and the IBM Personal Computer.

The modem can be operated directly from a terminal or a computer, either by entering a few commands or by computer software, AT&T said. A built-in speaker is said to allow the user to monitor dialing and other network activities until a call is answered.

Eleven preprogrammed internal settings allow users to customize the modem's settings. Five diagnostic

tests reportedly allow the user to check for correct operation of the modem and completion of data transfer. Model 4000 supports transmission rates of 300 and 1,200 bit/sec. Model 4000 costs \$400.95.

AT&T, 5 Wood Hollow Road, Parsippany, N.J. 07054.

COMPUTER CONSULTING CENTER, INC.

PClynx/36, PCLynx/38

Computer Consulting Center, Inc. has announced PCLynx/36 and PCLynx/38, command language interpreters that run on the IBM Personal Computer and facilitate data transfer between the Personal Computer and interactive applications on IBM System/36 and System/38 processors.

The products allow a user to oper-

ate a Personal Computer for off-line data entry or as an interface to interactive applications, Computer Consulting Center said.

The packages reportedly feature two-way data transfer between a Personal Computer and the larger systems. Standard query, retrieval and inquiry programs extract data from the larger system, and then PCLynx reads the data from the screen and stores it on a Personal Computer diskette, according to the vendor.

Each product costs \$695.

Computer Consulting Center, 575 Eighth Ave., New York, N.Y. 10018.

QUALITY SOFTWARE, INC.

Qcall

Quality Software, Inc. has announced Qcall, an asynchronous communications package that runs on an IBM Personal Computer with IBM's PC-DOS 2.0 operating system and 128K bytes of random-access memory.

The product features defined character sets including Ascii, Ebcidic and binary, plus instructions that allow the user to define character sets or modify existing sets, according to the vendor. Qcall can reportedly translate one character set to another character set.

Qcall is said to support transmission rates from 110 to 9,600 bit/sec and X-on and X-off protocols.

Qcall sells for \$150. A demonstration diskette is available for \$35.

Quality Software, 60 Lewis St., Newton, Mass. 02455.

CERMETEK

MICROELECTRONICS, INC.

Cermetek 1200 PC

Cermetek Microelectronics, Inc. has introduced a modem board for the IBM Personal Computer and Personal Computer XT. The board, the Cermetek 1200 PC modem, reportedly communicates at 1,200, 300 and 110 bit/sec.

The Cermetek 1200 PC modem is said to be compatible with the Hayes Microcomputer Products, Inc. communications control standard and to work in conjunction with most personal computer communications software.

The Cermetek 1200 modem is priced at \$406, according to the vendor.

Cermetek Microelectronics, 1308 Borregas Ave., Sunnyvale, Calif. 94085.

SANDFORD COMPUTER SYSTEMS, INC.

Videopro

Sandford Computer Systems, Inc. has announced the Videopro software decoder for transforming a microcomputer system running AT&T's Unix into a videotext North American Presentation Level Protocol Syntax terminal.

The decoder can be configured to any Unix system on any microcomputer for any color card, the company said.

Videopro also can be used with any resolution screen, according to Sandford Computer Systems.

The price for the Videopro decoder is \$140.

Sandford Computer Systems, 73 Walker Ave., Toronto, Ont., Canada M4V1G5.

See TALK page 103

DISTRIBU-DATA PLUS

The Global Solution:
SOFTWARE THAT FITS

Unmatched expandability, total system integration, and ready adaptability to the way you run your business—make Global's Distribu-Data/Plus the SOFTWARE THAT FITS for your company.

Design the ideal distribution system for your firm—don't hold anything back—and what you'll be creating is Distribu-Data/Plus. How do we know? For the past 14 years, Global research and development teams have been working closely with major manufacturers and distributors, like you, all over the country. We advised these professionals to help us develop SOFTWARE THAT FITS your distribution needs. And from every report received to date, we've succeeded!

With Distribu-Data/Plus, you get a comprehensive, user-friendly business system which includes order processing and billing, inventory control, sales analysis, purchasing, and accounts receivable—all in a single work time, on-line, fully integrated system.

Like to start small and work your way up? Distribu-Data/Plus is completely modular. So you can choose any individual feature you want. Then, all you have to do is add what you want when you're ready to grow. And when you're ready to change, you can change. Distribu-Data/Plus is built to grow with you.

Technical specifications: Distribu-Data/Plus is written in Cobol, uses CICS and runs under VSE, VSI, or MVS on IBM or compatible mainframes. If you prefer, Global will supply—and totally support—a complete turnkey solution, using our own highly priced ULTIMACX UNIX hardware series. Distribu-Data/Plus is truly the state of the art in distribution systems software today—providing a total business solution for large-scale, multi-user,

multi-company distribution companies. Finding the best possible solution to your growing business needs isn't an easy job. But that's exactly what Global/US is doing every day—with innovative systems like Distribu-Data/Plus.

Call Global today at 1-800-634-0065. And find out for yourself why Distribu-Data/Plus is the software that fits for the way you run your business today and tomorrow!

GLOBAL TURNKEY SYSTEMS
A Division of Global/US Systems Inc.



Thanks a Billion.

Data General annual revenues just exceeded one billion dollars. A milestone achieved only by America's best established Fortune 500 corporations. Thanks to 17,000 employees, 2,000 vendors, and thousands of customers of the 150,000 Data General computer systems installed worldwide.

Copies of the company's summary of operations and the 1984 results may be obtained by writing to: Data General Corporation, Public Affairs Dept., M.S. A-235, Westboro, Massachusetts 01580.

 **Data General**
a Generation ahead.

More than 200 sales offices in 56 countries.

Westboro, Massachusetts	Westbrook, Maine	Woodstock, Connecticut	Portsmouth, New Hampshire	Hong Kong, BCC	Austin, Texas	Apex, North Carolina
Research Triangle Park, North Carolina	Sunnyvale, California	Warrington, England	Tokyo, Japan	Southboro, Massachusetts	Feltham, England	
Clayton, North Carolina	Osaka, Japan	Manila, Philippines	Bangkok, Thailand	Manhattan Beach, California	Schwalbach, West Germany	
Millford, Massachusetts	Mississauga, Ontario, Canada	Colorado Springs, Colorado	Macau	Singapore		

MICROCOMPUTERS

LAPTOP from page 93

month, citing lagging sales [CW, Oct. 1]. Gavilan filed for protection under Chapter 11 of the Federal Bankruptcy Act on Oct. 1.

Gavilan's new president, David Vaughn, blamed the failure of the firm's laptop unit on its late arrival and its lack of IBM compatibility. Vaughn said the only assets of the company that potential buyers are even looking at are its development projects for an IBM-compatible laptop model.

Dataquest's Teige claimed that a recent market slump for laptops occurred because potential buyers were waiting to see what the new IBM-compatibles would be like. Colony predicted that with the arrival of the Data General/One, sales in that arena will improve greatly. "The whole idea of IBM compatibility is going to make the [laptop] portable market," he said.

The vendors of other 16-bit laptop models, though, say their products are selling well, despite the fact that none has the One's level of IBM com-

patibility.

Jules Silverman, manager of systems division marketing support for Sharp Electronics Corp., said the 9-lb PC-5000 is "selling well" and Sharp is "pushing ahead aggressively" in

Packard 110, according to Paul Deering, president of Execucom, Inc., the Burlington, Mass.-based parent firm.

Deering said the 110s were being bought by businessmen who were attracted to the unit's built-in Lotus

The key issue now is total compatibility with the IBM Personal Computer. Machines that meet that mark will 'take off' in sales, while those that do not will 'have to fit in some other niche of the market.' — Peter Teige, analyst

the lap-size computer market.

Meanwhile, Stacy Allen, manager of applications marketing at Grid Systems Corp., said that the company "just closed out our best month in history" from sales of its Compas 16-bit laptop computers. Both Sharp and Grid Systems declined to provide sales statistics, however.

At the retail level, the Boston area Execucom Computer Centers are "happy with [their] sales" of the Hewlett-

Development Corp. 1-2-3 package and the unit's ability to communicate with the HP 150 and the IBM Personal Computer, using an optional interface.

The 110, with its 16-line LCD screen, was not likely to be used for much word processing, he added.

Though the DG/One can run most Personal Computer software, the software must be supplied in the One's 5¼-in. diskette format or run

on an optional 5¼-in. DG diskette drive.

Analyst Chris Christiansen of Boston's Tanke Group, however, said there has been a "ground flow of developers" transferring their programs to the One from the Personal Computer's 5¼-in. diskette format.

Christiansen said the One will meet with success because it is, so far, the laptop that "comes closest" to the functionality of a full-sized personal computer. Colony, of Forrester, estimated the One's sales will rise to between 75,000 and 100,000 units next year.

The potential buyer's only problem with the One may be its price, noted Reid Cooper, owner of the Tech Computer Store, Inc. in Cambridge, Mass. The One is priced at \$2,895 for a basic system of 128K bytes and one diskette drive.

Christiansen, though, said buyers are likely to speed from 10% to 15% more than they would for a fully functional desktop computer in order to gain laptop portability. They are unlikely to sacrifice full functionality for price, he added.

"At last! An SPF-Like editor under CICS!"

**SYSD® offers
full functionality**

- Fully menu driven
- Full screen PDS control
 - line commands
 - full security & recovery
- Job submission & tracking
- Display batch reports on CICS 3270s
- Route reports to CICS / OS / RJE printers
 - full recovery / FCB support
 - automatic & selective report printing
- VS1, MVS, CICS
- Over 400 users

For more details on SYSD® call: (208) 377-0336

H&W

H&W COMPUTER SYSTEMS INTERNATIONAL
P.O. BOX 4785 • BOISE, IDAHO 83711



INSURE from page 93

The DG One machines will act as point-of-sale computers for working up product proposals and producing financial plans during the agent's initial visit to the client's office, Moschler elaborated. The company sells annuities and life, health and pension insurance and views the portable as a means to "close [the sale] in one visit," Moschler said.

Previously, agents would have an initial meeting with a client, return to their offices to calculate proposals and then return to the client's office to make a sales presentation.

The battery-powered One is perfect for making calls on clients because salesmen "don't want to worry about carrying a cord around," Moschler said.

The unit's full-size, 25-line screen also helped sell the insurer on it, as did the machine's compatibility with nearly all software for the IBM Personal Computer. Moschler said many of the applications that LOV wrote for the Personal Computer will be transferred to the 3¼-in. diskette format of the One.

LOV already uses DG hardware extensively, Moschler said. About 500 DG workstations are in use at its headquarters here, as is the DG CEO data communications network.

When the Ones arrive this month, they will become part of a company-wide implementation of DG computers that is also taking place in LOV's local offices, where between 20 and 40 DG MV4000 superminis are being distributed, according to Moschler.



The Data General/One

MICROCOMPUTERS

TALK from page 100

HAYES MICROCOMPUTER PRODUCTS, INC.

Hayes Microcomputer Products, Inc. has announced that Smartcom II 2.0 now runs on the IBM Personal Computer AT and the AT&T 6300 personal computer.

Earlier versions of Smartcom II did not work with either microcomputer. IBM Personal Computer AT and AT&T 6300 users with the incompatible version can receive this version for \$25, Hayes said.

Smartcom II features verification protocols and an X modem protocol that allows a user to communicate with bulletin board services. The product's batch command set directory stores up to 26 command sequences that allow the user to send and receive files at preset times, according to the vendor.

Smartcom II costs \$149. Hayes Microcomputer Products, 5525 Peachtree Industrial Blvd., Norcross, Ga. 30092.

GENERAL MICRO SYSTEMS PC Retrofit

General Micro Systems has announced PC Retrofit, a hardware and software package that lets an IBM Personal Computer or Personal Computer XT function as a Digital Equipment Corp. VT102 or Tektronix, Inc. 4010 terminal.

Continued on page 206

SNA from page 93

As stated by IBM, the 3270 emulation package, used as a communications server on the PC Network, requires — on the server Personal Computer — 256K bytes of memory, an IBM PC Network Adapter and an IBM Personal Computer Synchronous Data Link Control Communications Adapter.

Reportedly, if concurrent PC-DOS and server functions are allowed, the Personal Computer will need at least 320K bytes of memory while a user Personal Computer on the network requires only 564K bytes of memory and a PC Network Adapter. Some or all machines may need a color monitor and color graphics card. PC-DOS 3.1 is the required operating system in the network environment, according to IBM.

Accordingly, the emulation program performs a protocol conversion between PC Network nodes and the SNA network. A model 51C 3274 communications controller, by IBM, normally supports only eight 3270 devices, but since there can be 32 concurrent sessions on any given PC Adapter, presumably each 3270 server will support up to 32 concurrent users. The normal 3274 51C operates in half-duplex, usually at 9,600 bit/sec, and is only in a point-to-point circuit with the host front-end processor, which is a 3706, 3725 or equivalent machine. Multidropping half-duplex controllers decrease throughput and, as a result, response time at the user's workstation.

The 3274 is connected to the 3706

with a synchronous version of the RS-232C interface, either directly or through modems, with modems being the norm since the Model 51C is a remote rather than local controller. A typical 3270, SNA network is configured with a star topology modified only by the possible existence of multidropped communications controllers. Access to the mainframe IBM system is through a front-end processor, but the 3270 display stations are connected through 3274 or 3276 controllers. Depending on the model, each controller can handle from eight to 32 display stations. A normal display station is connected to its controller with 9804m (B065) coaxial cable. The 3274 or 3276 is normally connected via telephone lines or other twisted-pair cables.

Broadband CATV

Several years ago, the campus system I manage decided to use a broadband CATV system as the primary data communications medium. For research and instruction we maintain a large asynchronous, Sytek, Inc. Localnet 30 local-area network. For business and administrative purposes we run a stable synchronous network on our standard IBM model. The difference is that the communications between the front-end processor, from NCR Comten, Inc., and the 3274 is via a broadband system rather than over phone lines or twisted-pair cables. All the links on the system use 3M Corp. broadband,

point-to-point modems. Many of the microcomputers (mostly Tandy Instruments, Inc. Professional Computers and some Tandy Corp. products) are equipped with boards that provide 3278 emulation and are, in turn, connected via an B063 coaxial cable to a 3274 cluster controller. There are also a few terminals attached to the administrative network through a Sytek Localnet 50.

If we decide to install a PC Network, we will have the curious situation of the personal computers communicating on our existing broadband system at one set of frequencies, tied through the SNA communications server which is another microcomputer, to a 3M point-to-point modem running over the same cable system on another set of frequencies to our Comten front-end processor.

Regardless of IBM's announcement of its Cabling System in May, many who operate large computer and communications systems have already endeavored to find an appropriate single-communications technology that will support all data communications needs. Long before IBM's support of broadband, some had concluded that the CATV technology was best suited to this support. As this illustration suggests, the bandwidth available on a CATV system also allows the ability to do a variety of communications concurrently.

Computerworld/Mexico talks to computer people south of the border.

There are currently 15,000 installed computers on 12,000 sites in Mexico. These include mainframes, medium and small computers as well as personal computers. Experts forecast the sale of small, medium and large computers to grow at an average annual increase of 20% during the 1980s, despite Mexico's current economic problems. Minicomputers will be in great demand since they are small, affordable and efficient. U.S. manufacturers have maintained a 60% market share for the past three years with sales of over \$182 million. Computerworld/Mexico can bring your message to 10,000 key-decision makers in the Mexican computer community. Published on alternate Mondays, Computerworld/Mexico covers all the latest developments in hardware, software and terminals in addition to data processing and computer related subjects. Its goal is to provide useful information to data processing professionals throughout Mexico and Central America.

CW International Marketing Services is your one-stop advertising service in countries around the computer world. For more information on Computerworld/Mexico and the people who read it, just fill out and return the coupon below.



Blanca Le Plongeur Plummer,
International Marketing Services
CW COMMUNICATIONS, INC.
375 Cochrane Road, Box 896,
Farmingdale, N.Y. 11731
(516) 879-0700

Please send me more information on:

☐ Computerworld/Mexico ☐ Your other foreign publications.

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____

CW
Computerworld/Mexico, Inc.
Publishers of Computerworld and
other leading computer publications
around the world.

POST A PROPHET ON YOUR VAX



Need to predict the future? PACS™ helps you decide when and how to expand your VAX. It gives you:

- Complete information on who uses the computer, when and how
- Easy-to-use screen forms for data display
- Summary or detailed reports on up to 30 system variables
- Bar chart graphs of system use patterns

Name _____
Title _____
Company _____
City _____ State _____ Zip _____
Phone _____ Computer _____

SEND COUPON NOW FOR DETAILS

Signal Technology Inc.

5051 Encina Road, Gales, CA 95117 (805) 983-3771 Toll-free (800) 335-6757
VAX is a trademark of Digital Equipment Corp. COWK

THE NEW COMPUTERS FROM AT&T. FLEXIBLE. RELIABLE. AND VERY COMPATIBLE.

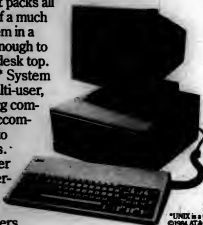
They're new in every sense of the word. New in conception, new in design, new in their ability to deliver unprecedented levels of computer performance. After over 40 years of designing and manufacturing computers, AT&T is proud to introduce a whole new line of innovative computers for business...AT&T Computers.

MEET THE FAMILY

The 3B2, 3B5, and the AT&T Personal Computer make up the new AT&T family of flexible business computers.

The AT&T 3B2 is one of the most advanced super microcomputers you can buy today. It packs all the power of a much larger system in a size small enough to sit on your desk top. This UNIX* System V based multi-user, multi-tasking computer can accommodate up to 18 terminals.

For larger family gatherings, the AT&T 3B5 minicomputers



make great hosts, because they can accommodate up to 60 users.

And meet the new AT&T Personal Computer. What makes it special is its ability to combine high performance with excellent

UNIX

graphics capabilities, an adjustable display monitor, and non-glare screen. Its flexibility allows it to operate as a stand-alone unit or as part of an integrated computer network. And its compatibility allows it to run most popular business software, including most available MS-DOS** applications.

THE FAMILY THAT WORKS TOGETHER

One big advantage of AT&T Computers is that when there's work to be done, everyone pitches in.

Each family member works together in a coordinated system, making tasks easier

*UNIX is a trademark of AT&T Bell Laboratories. **MS-DOS is a trademark of Microsoft Corporation. ©1984 AT & T Information Systems.

and users more productive. All AT&T Computers are based on our Information Systems Architecture, an open, communications-based structure that can accommodate and integrate not only our products, but also those of other manufacturers.

Another reason

UNIX

between terminals, workstations, and computers of all sizes. This local area network allows you to connect departments, buildings, industrial parks, or even campuses. And gives you fast response time and centralized administration and control.

Regardless of the equipment you might own or

MS
DOS

AT&T family members work so well together is our unique PC Interface. It bridges the MS-DOS and UNIX Operating Systems, allowing you to use your PC as part of a larger 3B network. Several PC users can thus share peripherals and files stored on the central 3B2 machine.

Yet another reason AT&T Computers are such a close-knit family is our UNIX System V Operating System, developed by AT&T Bell Laboratories. It's an operating system so flexible, it's rapidly becoming an industry standard. And because UNIX software is upwardly compatible, 3B2 software can run on 3B5 computers, thus protecting your investment and eliminating costly and time-consuming retraining.

THEY GET ALONG FAMOUSLY WITH MOST EVERYONE

AT&T Computers get along so well with each other, they can't help but get along with just about everyone else. The AT&T Information Systems Network links AT&T Computers with those of other manufacturers. It's a flexible, cost-efficient link

acquire, with AT&T Computers it will be like one big happy family.

BUILT-IN RELIABILITY AND SERVICE

Judging by the way they're made and cared for, this family will be around for generations. AT&T Computers meet the toughest design standards and most rigorous testing procedures.

And should you ever require service, we offer around-the-clock maintenance, and one of the industry's largest service forces.

For more information call your AT&T Information Systems Account Executive or 1 (800) 247-1212. Then make arrangements to meet the family: the 3B2, 3B5 and the AT&T Personal Computer. When it comes to meet-

ing your needs, AT&T Computers couldn't be more compatible.

AT&T INFORMATION SYSTEMS. WHEN YOU'VE GOT TO BE RIGHT.



MICROCOMPUTERS

Continued from page 183

The board drives an IBM monochrome or an Amdek Corp. monitor in standard IBM modes and supports options such as 90- or 132-col. screen width, a Hercules Computer Technology graphics card and an IBM graphics card, according to the vendor. PC Retrofit reportedly features an asynchronous port, a printer port and a clock/calendar.

Software to emulate the VT102 provides full screen

and keyboard emulation, local printer support and bidirectional file transfer, according to General Micro.

Tektronix emulation software is optional and is said to allow users to run a number of graphics programs from other systems.

The Retrofit kit sells for \$749 while a board with the Tektronix kit costs \$889.

General Micro Systems, Suite 205, 6440 Flying Cloud Drive, Eden Prairie, Minn. 55344.

GRID SYSTEMS CORP. Mits; Microgate 6630

Grid Systems Corp. has announced Mits and Microgate 6630, two communications packages for Grid's Compass portable computer line.

Mits allows a user to access data on any microcomputer running Microsoft Corp.'s MS-DOS or IBM's PC-DOS operating system, Grid said. The software is said to allow users to access data

base services and to support Compass-to-Compass communication.

Microgate 6630 lets a Compass emulate Tandem Computers, Inc. Model 6630 multipage terminal, according to the vendor. Microgate 6630 reportedly allows a Compass to communicate with Tandem mainframes.

Mits costs \$198, while Microgate 6630 sells for \$395.

Grid Systems, 2535 Georgia Ave., Mountain View, Calif. 94043.

CBIS, INC. Network-06

CBIS, Inc. has announced Network-06, a resource management system for networking TeleVideo Systems, Inc. or Microsystem International microcomputers.

The product reportedly provides multiuser systems with the ability to share storage and output devices while providing data security. The product reportedly is compatible with Digital Research, Inc.'s language packages and provides 60K bytes of memory.

Network-06 supports standard CP/M calls with extensions, enabling it to emulate Digital Research, Inc.'s MP/M operating system record and file-locking features, CBIS said.

Network-06 costs \$900. CBIS, P.O. Box 14086, Atlanta, Ga. 30324.

NOVATION, INC. Smart-Cat Plus

A communications system for the Apple Computer, Inc. Macintosh has been introduced by Novation, Inc.

The Smart-Cat Plus system uses a Hayes Microcomputer Products, Inc. protocol and a stand-alone 300 or 1,200 bit/sec modem.

It sells for \$499. Novation, Box 2275, 30409 Prairie St., Chatsworth, Calif. 91311.

ARRAY from page 93

Timeliness was named as the second sin. "Everyone claims that their data base is up-to-date, but that is simply not true," he added. "There is a significant time between when an update is announced and [when it is available] in the data base."

Poor data base design may yield inconclusive results, according to Spangler. "With some products, a user can enter IBM hardware and get 52 references for only one product," he noted.

He said data bases often are designed for technicians rather than end users. "Boolean logic and various protocols are too difficult for most people to understand," he said.

Another problem Spangler cited was the financial instability of many on-line vendors. "At least four companies recently went bankrupt," he claimed.

Joseph Segel, chairman of Software Digest in Wynnewood, Pa., noted that most product reviews simply contain the reviewer's opinion. "If a person learns one product, he tends to compare other products with that product. Packages that work in a similar fashion receive high marks, while other products that may be more useful are downgraded."

COMMON SWITCHING STATISTICAL MULTIPLEXERS: TS-600 SERIES

WE SOLVE THESE PROBLEMS EVERY DAY.



Get everyone into the act with the new TS-600 Series.

If increasing demand for computer ports and distributed resources has your system in a stranglehold, there's no limit to the breathing space you could enjoy with the TS-600 Switching Statistical Multiplexer.

The newest addition to the ComDesign family of networking products, the TS-600 Series provide the same cost savings and network control as the popular TC-500A. With no limit to the number of users who may contend for any available ports, the TS-600 offers all the features of a data switch, port contention unit and intelligent statistical multiplexer in one.

When used individually, a TS-600 acts as a port selector and front-end processor, permitting local resource sharing. Connected in pairs, TS-600's become the central point of control in a powerful transparent switching network, concentrating up to 32 devices over a single communications link. ComDesign's modular hardware and firmware plan allows for easy network expansion and access to the latest software developments.

The TS-600 Series multiplexers are designed for ease of use, and are available with integral 4800 or 9600 bps modems. For more information on the new TS Series or for help with any data communications problem, call us. Toll-free (800) 235-6935, or in California (800) 368-8092.

ComDesign

Leaders in Data Communications
761 South Kellogg Avenue
Goleta, California 93117



Struggling to tie everything and everyone together without sacrificing performance or breaking the bank? Let your stat mux do it for you!

COMPUTER INDUSTRY

CAI's road to growth paved with acquisitions

By Paul Gilin
CW Staff

JERICHO, N.Y. — If you look at the software market as a giant jigsaw puzzle, then Computer Associates International, Inc. (CAI) is methodically dropping the final pieces into place.

Computer Associates, which is best known for its extensive offerings in the technical field of systems and utilities software, has been quietly buying and building its way into virtually every major segment of the software industry over the last two years. In the process, revenues have skyrocketed from \$17.9 million in 1980 to an estimated \$140 million in fiscal year 1985.

Computer Associates is becoming a very large company. Now more than 1,500 employees strong, it offers more than 50 products in 14 countries. Its compound annual growth rate for the last five years has been well over 50%.

More impressive, perhaps, is the fact that Computer Associates claims to have the largest mainframe customer base of

any software vendor — about 16,000 sites, or more than half the IBM mainframe installations worldwide.

Much of that growth has been through acquisition.

The company began a buying binge two years ago when it acquired Capex Corp., a firm nearly as large as itself. Since then, the acquisition list has grown steadily. The company bought Information Unlimited Software, Inc. and Stuart P. Orr Associates, Inc. in 1983.

In May 1984, Computer Associates boosted its microcomputer line with the addition of Secura Corp. Three weeks later, the company bought Johnson Systems,



CAI photo by P. Gilin

Inc., a seller of operations management software for data centers. And just last month, Computer Associates acquired Arjay Computers, Inc., makers of a package for IBM DOS-to-MVS conversion.

Despite its position as one of the five largest software companies in the world, Computer Associates keeps a low profile. One reason is that it has come at the "total solution" concept from an unusual angle. Rather than building its reputation as a data base management system (DBMS) or packaged application vendor, Computer Associates established a foothold in the far less glamorous field of systems and utilities software.

While the company today offers DBMS and applications products as well as an extensive line of micro software, its bread and butter is still embodied in products like CA-Jasper/JA, a job accounting and performance evaluation system, and CA-Sort, a dynamic sort facility. Computer Associates still offers more than 26 products in the systems and utilities area.

See CAI page 108

■ A U.S. Customs Service proposal to place tracking bugs on high-tech exports has gained little favor among computer vendors/112

■ Tandem Computers, Inc. settled an investigation by the Securities and Exchange Commission by agreeing not to commit further violations of securities laws and regulations/118

■ Storage Technology Corp. last week said it expects to post a \$20 million loss for the third quarter, a result that could place it in technical default on loans issued with requirements for profitability/118

Meanwhile, back at AT&T...



INDUSTRY INCIDENT

Peter Lowber
CW Staff Writer

When is AT&T going to drop the other shoe? The telecommunications giant's leap into the computer industry seems, in some respects, to be in free fall.

With an asset base on a parity with IBM and with what should be a leg up as the computer industry increasingly moves toward a communications orientation, AT&T's deregulated entities have been seen in some quarters as the only potential challenger to IBM's dominance.

As discussed in this space last week, AT&T is currently the only combination in the computer industry with the resources to blunt IBM's increasing dominance of key segments of the industry. With the acquisition of Rolm Corp., IBM will likely be able to address its one great failing — office communications.

Although some industry observers believe it is only a matter of time before AT&T gets its computer act together, others see many nagging questions about the strategies of the companies comprising AT&T Technologies.

Inconspicuous superminis

While AT&T's personal computer PC6300 is making a splash in the print and television advertising market, the superminicomputers introduced earlier this year seem most inconspicuous.

One industry analyst, who asked not to be identified, said of AT&T's 3B line of products, "Not that many people are really seeing them out there."

Another analyst, Peter Lowber, who follows the superminicomputer industry for the Boston-based Yankee Group, said AT&T's offerings were unimpressive when first announced and could "get blown away" next year when a whole new generation of products from established vendors hits the market. "I have

See AT&T page 121

Export revision dies in Congress

WASHINGTON, D.C. — Congressional efforts to fashion a new version of the Export Administration Act collapsed last week.

The act would have given the Department of Defense added legal authority to review applications for export licenses of computers, telecommunications equipment and other high-technology products.

U.S. House and Senate conferees gave up a six-month-long effort to produce a new system for regulating exports, leaving a situation in which the executive branch must rely on emergency powers to extend the regulatory licensing process in the old law, which expired in December 1983.

The U.S. Commerce Department currently has sole power to review applications for export licenses, and the House version of a new export bill would have extended this authority. However, the Senate version, sponsored by Sen. Jake Garn (D-Utah) granted review authority to the Department of Defense, which has lobbied within the Reagan administration for a greater role.

Silicon Valley associations to monitor toxic cleanup

By Kathleen Sullivan
CW Staff Writer

PALO ALTO, Calif. — A group of electronics associations recently announced here the creation of the Industry Clean Water Task Force, a coalition designed to coordinate efforts by electronics firms to solve Silicon Valley's groundwater contamination problems.

Groundwater contamination has been an issue here since 1981, when a local electronics firm reported that hazardous materials, which were stored on site, were leaking from their storage containers. Since then, a state regulatory agency has identified 136 contaminated sites in Silicon Valley, the majority of which are linked to electronics firms.

Mounting public concern led to the passage of

local and state laws requiring stiffer controls on the storage of hazardous materials. In addition, the U.S. Environmental Protection Agency recently added 19 Silicon Valley contaminated sites to its Superfund list, which designates particular sites as national priorities for cleanup.

The Industry Clean Water Task Force plans to release a scorecard that will provide information on the status of various cleanup efforts by electronics firms, a spokesman said. The group will issue its first scorecard within 60 days, he said.

The task force will also work to promote an exchange of technical information between electronics companies engaged in the cleanup process and encourage joint cleanup efforts, the spokesman said. He emphasized that the task force will not be involved in the actual cleanup procedures. More

than three dozen companies have agreed to provide the task force with \$100,000 in seed money to launch its initial efforts.

Ted Smith, who heads up the Silicon Valley Toxics Coalition, a grass roots organization that has worked on contamination issues for 24 years, said that if the group's scorecard provided a detailed look at the cleanup efforts, it could be an effective means of encouraging recalcitrant firms to clean up contaminated sites.

But Smith questioned whether there was any need to encourage the exchange of technical information between companies. "There is no doubt that the contamination cleanup is a technically difficult area," he said. "But the reality is that the companies all rely on the same outside consultants who make technical recommendations."

**Peat Marwick technology
has exploded the myths
about computer systems
development:
It doesn't have to take
forever or cost the earth.
Introducing Structured
Retrofit.**

Even the best-managed computer system can develop spaghetti code over the years. Changing demands and expanded requirements can make yesterday's state-of-the-art a state of confusion. And until now you haven't had a cost-effective way of replacing your system.

But now Peat Marwick has the answer: a technological breakthrough that gives you the best of both worlds: the technical currency of a new software system at an affordable price. It's called Structured Retrofit. Its advantages are simple: You save the valuable existing information from your present system by regenerating it in a structured format that is then used as a base to build your new target system. Even on a new computer.

Your immediate benefit is you can produce your new system with savings in time and expense as great as fifty percent of that needed to write an entirely new system. Only Peat Marwick's software engineering services, like Structured Retrofit, can do this. And you gain the advantage of a major reduction in maintenance programming costs.

Peat Marwick's software engineering technology creates workable solutions for your business problems. Learn more about the advantages of systems development through the Structured Retrofit process. For a free brochure send in the coupon or call **800-344-3600** (In Illinois 800-328-4200).

Mail to: Peat, Marwick, Mitchell & Co.
345 Park Ave., Box SR, New York, NY 10154

Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____

SM-CR 10/1984



Accounting and Auditing/
Tax Services/Management Consulting/
Private Business Advisory Services

DIGITAL DISPLAYS THE TERMINALS BEST ENGINEERED FOR BUSINESS.

Before you make any investment in business graphics terminals, it really pays to investigate what you'll be using them for.

If you're like most businesses, your terminals will be used approximately 70% of the time for generating text and numbers. And only around 30% of the time for strictly graphics purposes. The October 1983 *Infosystems* article, "How to Buy Graphics Displays," coauthored by Jim Warner, CEO of Precision Visuals, Inc., states, "While it may be true that one picture (chart, graph) is worth a thousand words, there will always be the need for words, thousands of words, in the day-to-day activity of the office. Special graphics-only devices can have limited value in a general office environment."

At Digital, the first step in engineering every product we make involves a thorough analysis of who will use it, what it will be used for and which features will help make people more productive in their jobs.

That's been true of every terminal we've designed and helps explain their widespread acceptance and popularity.

And you'll find it's equally true of Digital's latest entries, the VT240™ and VT241™ terminals.

ENGINEERED FIRST FOR WHAT YOU NEED MOST.

As the newest members of Digital's family of terminals, the VT240, a conversational



text and graphics terminal, the VT241, with the added

dimension of color, continue the tradition of engineering excellence for performance. They offer full VT100™ compatibility to take advantage of a host of offerings already developed. And to meet the needs of the business environment, you'll find a set of standard text features that are either unavailable on other terminals or may have to be purchased at an additional cost.

These features include bidirectional smooth scrolling, split screen, a choice of 80 or 132 columns per line and a double width/double height format. A highly legible 8 by 10 dot matrix character font displays true ascenders and descenders for exceptional crispness and legibility. If cer-

tain information needs to be highlighted, you can select from a combination of bold print, blinking and underlining in either normal or reverse video. For your added convenience, there's even a built-in printer port for printing hard copy.

Both the VT240 and VT241 terminals give you the option of erasing selected character positions on the screen for more efficient communications and increased productivity. For those applications that require data to be entered by filling in the blanks of a form, once the data has been accepted by the host, the filled-in information—and only that—can be erased by means of a single command. The form itself remains up on the screen and is ready to accept the next data entry sequence.

Beyond this remarkable range of text capabilities, the VT240 and VT241 clearly answer your graphics needs as well.

HIGH-IMPACT PRESENTATIONS IN GRAPHIC DETAIL.

The inclusion of a diagram, chart or graph in any report or presentation can immediately transform complex data into easily understandable information.





touchtype, and an editing keyboard and special function keys that reduce the number of keystrokes to complete an operation. Also, the set-up mode offers a menu in plain language (plain English, plain French and plain German) that leads you through each operation in step-by-step sequence.

All this effort has not gone unnoticed. Digital's video terminals received the International Design Award in 1984. The award is based on ergonomic suitability, safety, design quality, practical useability, technical excellence and practical visualization.

NOT HARDWARE DEAD END TO A PLAN.

The VT240 and VT241, like every Digital hardware and software product, are engineered to conform to an overall

Both the VT240 and VT241 terminals generate bit map graphics in a choice of two protocols—Digital's ReGIS™ (Remote Graphics Instruction Set) and Tektronix 4010/4014.

choose a box, circle, line, polygon, triangle or arc.

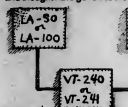
The Tektronix 4010/4014 protocol supports the full array of existing 4010 compatible graphics software. Besides, Tektronix Plot 10,™ TELL-A-GRAF™ and DISSPLA™ from ISSCO* and DI-3000, GRAFMAKER™ and GRAFMAS-TER™ from Precision Visuals are also supported.

When you're using third party software, Digital provides you with the total hardware/software solution: video terminals, hard copy with the LVP16™ Pen Plotter and the VAX™ computer.

THE HIGHEST AWARD FOR ERGONOMIC DESIGN.

Your people have to spend long hours in front of a terminal. It stands to reason the easier they are to use, the more productive the results.

That's why so much time and thought have gone into the



ergonomic design of the VT240 and VT241.

First of all, the non-glare monitor does not put a strain on the eyes. Plus, it tilts to adjust to the exact viewing angle that's most comfortable to work with. The detachable keyboard is ruggedly constructed, yet light enough to place on your lap. Even the way the keyboard has been arranged boosts productivity.

There's a standard typewriter keypad so you can

computing strategy. This means our products are engineered to work together easily and expand economically. Only Digital provides you with a single, integrated computing strategy direct from desktop to data center.

For more information and the name of the Authorized Terminals Distributor or Digital Representative near you, call 1-800-DIGITAL, extension 700. Or write Digital Equipment Corporation, 2 Mount Royal Avenue, UP01-5, Marlboro, MA 01752.

THE BEST ENGINEERING COMPUTERS IN THE WORLD

digital™



ReGIS lets you create and store business graphics as simply as producing ASCII text. With VAX-11 DECgraph™ and VAX-11 DECslide™ software, even a novice can prepare graphs and charts and turn them into slides. Self-explanatory icons let you

COMPUTER INDUSTRY

Smuggling detection plan stalled, feasibility questioned

By James Connolly
CW Staff

WASHINGTON, D.C. — Five months after its existence came to light, a U.S. Customs Service plan to plant electronic tracking bugs in computers appears no closer to success, observed officials in the computer industry and U.S. Congress.

Project Rampart is intended to help U.S. officials track electronic equipment that might be smuggled to Soviet bloc countries.

"It's still in the development stage. We are trying to develop a tool which will alert customs inspectors to the presence of sophisticated technological equipment," said customs spokeswoman Christine Fraser of Project Rampart. She said no decision has been reached on what type of device would be used or how it could be monitored.

Electronic device

"It would be an electronic or mechanical device, and if it was going to be put on equipment at the exporter's or manufacturer's premises, we naturally would need the cooperation of those industries," she added.

But spokesmen for several computer companies said customs officials have not pressed for that coop-

eration and have made minimal inquiries — none in recent months — as to the possibility and feasibility of bugging computers.

"The way I understand it, customs really hasn't made any serious inquiry. They've just put out feelers, testing the waters to get people's reaction," said a spokesman for one computer manufacturer who asked not to be identified.

Far-out concept

Control Data Corp. Vice-President for Government Programs Hugh Donaghue reported no recent contact from customs and said, "It still seems like a pretty far-out concept. I still question the technical feasibility."

Donaghue noted that the concept raises numerous territorial and liability questions. He said an electronic bug that emitted a continuous signal could raise the question of interference with a computer's operation and destroy a user's data.

He questioned who would be liable in such a case and how even the U.S. allies would be convinced to let customs monitor the bug's transmissions in its ports.

Donaghue suggested that a more cost-effective means of tracking equipment would be placing bar code labels on equipment and shipping crates, allowing inspectors with hand-held bar code readers to know what type of equipment is being

shipped overseas.

As aide to U.S. Rep. William French (R-Minn.), a member of the House Subcommittee on International Economic Policy and Trade, said the congressman expects Project Rampart to come up for discussion when a general customs regulation bill is aired in January.

"We haven't heard much about it since the authorization hearing last spring."

"The congressman had a briefing on it then, and we've just been waiting to find out where it is going. It does make us nervous. It doesn't seem to have much chance of working," said Pat Evland, French's administrative assistant.

Study covers DP impact on banks

WASHINGTON, D.C. — Computers and communications technology are fostering rapid and dramatic change in the financial services industry, but a period of stability can be expected, according to a recently released congressional report.

The report, "The Effects of Information Technology on Financial Service Systems," was issued by the Office of Technology Assessment, which performs research for congressional committees drafting legislation.

Congress has been struggling to rewrite banking laws to reflect the shifting roles of banks in light of competing services being offered by brokerage houses, credit card concerns and the savings and loan industry.

Main conclusions

The main conclusion of the report was that information processing technology has already caused rapid change, such as making it possible for banks to handle 57 billion checks annually, for credit card companies to process more than 3.5 billion credit card drafts and for brokerage houses to register more than 30 billion securities trades annually.

However, the report noted, "Rapid and dramatic change in the financial service industry will not persist indefinitely. There will be a period of stabilization, probably over the coming decade."

The major change the report predicted was the offering of new financial services by a wider variety of providers — such as grocery stores and other traditional retail outlets that accept cash payments.

See REPORT page 121

The only
for com
who want e

Before this computer was installed, our business was a mess. Now it's a model of efficiency. We can't get it all our equipment in one single system.

"Instead of one computer for design, one for database management, and one for our processing, why can't we get all our equipment in one single system?"

"Before I put one more computer on the shop floor, I want one powerful system that puts it all together reliably: inventory control, shop scheduling... even shipping."

"This company's marketing decisions are too big for one little spreadsheet. I need total decision support if I'm going to meet my revenue goals. And I need it now. Or after lunch, at the latest."

COMPUTER INDUSTRY

Computer competition causes EEC to flex muscles



OUTSIDE LINES
Alonso D. Saunders

Second of two parts.

The head of the European Economic Community's (EEC) competition commission has identified a problem he shares with virtually everyone: too much work. He has therefore proposed as a priority the enforcement of the EEC's antitrust judgments in local, that is, national courts.

This solution would of course take some of the burden from the European

Court of Justice, but it will also increase the importance of national lawyers in EEC antitrust cases. The commission is working overtime to see to it that the regulation is effective sometime in 1985.

Four cases illustrate the fact that more competitive activity will be tolerated and that product pricing will be closely scrutinized.

The EEC told the consumer electronics industry that Saba, a German manufacturer of audio and video equipment, must allow every EEC dealer the opportunity to resell Saba products. To American companies, this sounds like the "availability" issue, so it has not provided a conceptual problem. To the Europeans, how-

ever, its implementation is undergoing considerable analysis.

The second case involves an American company, Apple Computer, Inc. Apple made an agreement with the UK's director general of fair trade that, in effect, allows dealers to resell Apple products at almost any price the dealers choose. "Suggested retail prices" means now just what it says — suggested. Deviation by dealers is not automatically enforceable by the manufacturer in a court of law. The agreement with the director general was a setback for Apple's aggressive strategy of stopping discounts. As expected, Apple started the controversy when it terminated a dealer under the UK's Resale Prices Act,

which permits termination for so-called "loss-leader" activity. The dealer, however, was able to prove that it was only selling at lower margins.

Brasun AG also learned the vicissitudes of discount marketing and distribution. Brasun used a dealer for selling below the wholesale purchase price, which in West Germany constitutes loss leading. The German court and the German Federal Cartel Office were of the same mind on this issue: There is no reason a dealer should be forced to sell a product at the suggested retail price. So long as the sale is competitively priced, loss-leading is not, as a short-term matter, inherently anticompetitive. The court also had difficulty believing that Brasun's product lost public esteem when sold at a discount.

Finally, in an instance of piercing the corporate veil to look at transfer pricing, the UK's Customs Excise Office imposed a software disk originating from the U.S. parent because of a disagreement over the software's proper valuation. The authorities believed that the proper valuation included software development and programming costs. Eventually, the authorities compromised on the basis of an intracorporate tariff to the specific plant, but the fact that they are questioning intracorporate transfers pricing is troublesome. For national revenue-raising authorities, commercially traded software is tangible, and therefore subject to duty. There is now the emerging European view that intracorporate transfers, that is, noncommercially transferred products, have a higher value that includes heretofore excluded development costs and other overhead costs previously attributed to corporate headquarters.

The EEC, as well as national governments will increasingly have the wherewithal to control their own R&D destiny better. Pricing issues will cause disharmony as local fiscal authorities press for more income and information, which American companies will find necessary to provide about confidential pricing and costs.

The authorities have become sophisticated in understanding the relationships between product costs, distribution/sourcing and transfer pricing. As a result, doing business in the EEC will continue to be one of the most challenging marketing experiences in the world today.

Saunders is a Boston-based attorney with a practice focusing on international marketing, antitrust issues and corporate finance.

You can do more with a Prime system. We're a Fortune 500 company with worldwide support. With a family of high-performance computers so compatible, you can interchange hardware and software. With complete networking and communications. And with over 1,000 software solutions, for every imaginable need.

PRIME
Computer

Find out what you can do with our versatile systems. Call 1-800-343-2540 (in Mass., 1-800-322-2450) or your local office. Or write: Prime Computer, Prime Park, MS 15-60, Natick, MA 01760. In Canada: 416-678-7331; Prime Computer of Canada Ltd., 5945 Airport Road, Mississauga, Ontario, L4V1R9 Canada.

We're versatile, so you can do more.

● Data General

- SYSTEMS / ADD ONS
- LOCAL FIELD SERVICE
- NATIONAL DEPOT REPAIR
- UP TO 60% OFF LIST
- ALL CABLES
- BUY • SELL • LEASE

PIGSONE INTERNATIONAL
814-780-1000 317-281-7000
1000 N. Center Blvd. Suite 1000
Pittsburgh, PA 15222 Chicago, IL 60606

COMPUTER INDUSTRY

Alpha Microsystems focuses on OEMs to spur sales

By Peter Bartlett
CH Staff

FRAMINGHAM, Mass. — Alpha Microsystems, Inc., the Irvine, Calif.-based multiuser microcomputer vendor, recently reported a slowdown in orders, owing largely to longer sales cycles experienced by its value-added resellers. But the company decided more than a year ago that its traditional value-added reseller strategy had its limits.

Laurence J. Abzug, head of the company's OEM sales division, in an interview here prior to the company's most recent financial report, explained that the seven-year-old company decided 18 months ago that it could no longer rely solely on its distribution network of some 400 value-added resellers. In March, the company launched an OEM program to sell its well-established, multiuser, multi-tasking systems to larger vendors.

Claiming an installed base of 30,000 systems, Alpha Microsystems was an early leader in the multiuser marketplace and reported sales of \$28.7 million for the first half of the current fiscal year. But multiuser applications have evolved recently from an industry niche status to a new wave status. In releasing the company's second quarter report Oct. 3, company President and Chief Executive Officer Richard Cortese said he believed anticipation of IBM's Personal Computer AT had a dampening impact on the company's sales, which grew only 5% from the previous quarter.

With IBM directly addressing the multiuser market and other large vendors such as Digital Equipment Corp. setting their sights on the same target, the viability of the smaller pioneer companies is in question. A case in point was the recent decision by multiuser vendor Fortune Systems Corp. to loan \$5.75 million to another multiuser vendor, North Star Computers, Inc. Fortune, which reported revenues of \$20.3 million and a profit for the second quarter after four quarters of losses, considered merging with North Star, but the marriage was called off.

In that type of atmosphere, Abzug said, Alpha Microsystems hopes to build up an OEM business to provide 50% of the company's revenues in four years. "We are positioned so

that [a shakeout] is the farthest from our thoughts," he said. Abzug conceded that the company may lose market share in a growing multiuser market but asserted "the pie will get bigger," and the company will continue to grow.

In addition to pursuing vertical market applications, the company also has been negotiating with "one of the largest Japanese integrated systems companies," Abzug said. He would not identify the company but said an announcement should be forthcoming in November or January concerning the Japanese company offering Alpha Microsystems-based products in the U.S. Such an agreement would be a marked change from

the traditional Japanese approach of offering components for use in U.S. vendors' systems.

Although Alpha Microsystems' products use the company's proprietary Amos operating system and also offer a version of AT&T's Unix System V, Abzug said the units are compatible with IBM's Systems Network Architecture and can be expanded from two to 60 users without having to change applications software.

Abzug also said the company believes it can distinguish itself with a line of video-based storage and communications products. He said the company already has 3,000 installations of a backup storage drive using

pulse-code modulation to store data on videocassette tapes using a type of videocassette recorder.

Similarly, the company offers a video-based network with a local-area network that uses coaxial cables and "moves data as if it were a TV signal," Abzug said. He said the network can be accommodated in a CATV system, and signals can be broadcast to satellite links without the need for remodulation.

"There are very obvious advantages that have not been commercially explored," Abzug said, claiming that users can purchase a receive/broadcast dish antenna for about \$1,500 and set up low-cost, constant-stream transmission networks.

WE'RE OUT THE FEDERAL OF BIG PA

Over the past eleven years, people have come to think of Federal Express as the best way to send important letters and small packages.

That's really too bad.

Because while almost everyone knows Federal Express is great for small things, almost no one knows we're also great for big things.

WE'RE OUT TO CHANGE ALL THAT.

Most people immediately assume that getting Federal Express service for a big package or shipment will cost big money.

But just take a look at the example on the left.

Sending a 150-pound package from New York to Los Angeles actually costs a lot less with Federal Express than with Emery or Burlington Northern.

This isn't some trick example. To most people, a package that weighs over 100 pounds costs less by Federal Express than with many major air freight companies. Even less than many major freight forwarders.

It also pays to use Federal for your bulk shipments. With our new Hundredweight pricing, instead of charging you by the weight of each individual package in your shipment, we'll charge you based on the total weight of the shipment.

So if you're sending, say, a 12-piece shipment weighing 300 pounds from New York to Los Angeles, it will only cost \$465.00. The same shipment would cost \$748.80 by Emery. Even Burlington Northern would get \$488.25.



\$189.



\$234.



\$376.



COMPUTER INDUSTRY

Word of mouth key in selling Perception's voice device

By Peter Bartelme
CW Staff

CANTON, Mass.—Riding high after signing a marketing agreement with AT&T, executives of Perception Technology Corp. based here are convinced they can sell MIS managers on the need for a data entry/voice response system.

Selling anything based on voice technology to MIS managers would seem to be an exercise in frustration, but Joseph W. Scally Jr., president of the 60-employee company, said he believes that the MIS professional obtains most of his information on products from peers who have used the products. And Perception Technology has almost 400 installations

at such firms as Miller Brewing Co. and Chase Manhattan Bank.

"The guys running MIS today are very cost-conscious. They are usually operating as a profit center," according to Scally, who joined the 16-year-old company in 1980.

What the company is offering is a communications product with which customers can call in and obtain information such as shipping dates, order status and the like from company mainframes. Scallan can also use it to call in orders. All this without ever having to deal with a person.

The company's product, the BT-II Data Entry/Voice Response System, is based on Digital Equipment Corp.'s LSI-11 microprocessor and functions

as a terminal interface to host computers of most major vendors, including AT&T's 3B series, Scally said. For IBM and compatible equipment, the system emulates a 3270 terminal.

Sounds like human speech

People calling in hear recorded words and phrases that have been digitized and stored in random-access memory or electrically programmable read-only memory. The company claims that the system emits sounds resembling human speech, as opposed to speech synthesis systems such as DEC's Dectalk product.

Rather than employing humans to sit at terminals and respond to phone requests for information stored in

host computers, the MIS department can set up a BT-II system that tells callers to press those telephone pad keys to generate Ascii code and obtain particular types of information, such as order status or a bank account balance. The system can also prompt callers to punch in a number for connection to a employee.

"How many times do people call that department for the same information, asking, 'Did you ship it?' or 'Where's my order?'" Scally said. "Right now, every MIS manager wants to provide more service... but he can't afford to hire more people to answer phones."

According to Leon Ferber, the company's engineering vice-president, the system can be configured to handle as many as 32 telephone lines, operating as a cluster controller. Operating on a DEC VAX-11, he said, the system would only utilize 1.5% of the host resources.

Scally said he recognizes the general reluctance to adopt voice technology within MIS. DEC's provision of its Dectalk product has created an awareness of voice products but could also backfire on the fledgling industry. "If all [DEC] does is get people to call [the Dectalk demonstration], it will hurt the industry—that [Dectalk] voice is horrible," he said.

The greatest challenge facing voice products, according to Scally, is that, "We have to make people comfortable with the technology."

TO BECOME AN EXPRESS MANAGER.



And, if you use our economical 1 to 2 day Standard Air™ service, or qualify for a volume discount, you'll save even more.

WE'RE OUT TO DO FOR BIG PACKAGES WHAT WE'VE DONE FOR SMALL PACKAGES.

Don't let our low prices scare you away. You'll still be getting the same service that's made us the biggest name in small packages.

The same 10:30 AM* delivery. The same Saturday service. And the same door-to-door convenience.

You'll get our unique network that includes the most advanced tracking system in the business. So you'll never have to worry about your package getting lost.

Best of all, with our new 150-pound limit, as long as each package doesn't weigh more than 150 pounds, almost no shipment is too big to send Federal.

WE'RE OUT TO GET YOUR PACKAGE TO MORE PLACES THAN ANYONE ELSE.

Since we're the largest air express company in the United States, it's not surprising that we go to a lot of places.

More places overnight, in fact, than any other delivery company.

So next time you have to get something to Walla Walla or Spurger overnight, you won't have to waste a day trying to figure out which company can get it there.

And you won't pay extra charges to get your package or shipment to some place other companies consider off the beaten track.

WE'RE OUT OF SPACE.

For more information about why you should be using Federal Express for your big packages and shipments, call

1-800-238-5355.

Because if you think Federal Express is only good for small packages, you're making a very big mistake.

FEDERAL EXPRESS
WHY FOOL AROUND WITH ANYONE ELSE?

ENCYCLOPEDIA



The *UNIX System Encyclopedia* is the largest available collection of information about the UNIX marketplace. Over 400 pages are filled with a comprehensive UNIX directory including 100 pages of manufacturer specifications and photographs, software reviews, and articles on the UNIX system.

- ☐ Please send me a copy of The UNIX System Encyclopedia \$10.25 (includes \$1.25 shipping and handling).
- ☐ CALIFORNIA RESIDENTS \$49.00 (includes 6.5% sales tax).
- ☐ INTERNATIONAL \$41.00 (includes \$4.25 shipping and handling).

NAME _____
TITLE _____
COMPANY _____
CITY _____
STREET _____ ZIP _____

Write: Warren
3550 Brynmore Rd., Suite 201
Palo Alto, CA 94304 (415) 434-8864
*Times are subject to change without notice.

ADVERTISEMENT - ADVERTISEMENT

Directory Lists 16,000 D P Users

NEW YORK - The 4th edition of the 1984 Directory of Computer Installations, lists 16,000 computer users in NY, NJ & CT. Each site includes a profile of the hardware installed, software installed, languages, databases, etc., consultants used, future plans, applications and DP

executives' names, titles, and phone numbers. An index provides quick access to 135 cross references by hardware, software and industry. Price-\$370. Call (212) 663-0666. Computer Management Research, Inc. 20 Waterside Plaza, NY, NY 10016. Act now and receive free vendor's directory.

ADVERTISEMENT - ADVERTISEMENT

COMPUTER INDUSTRY**Tandem consents to SEC check**

CUPERTINO, Calif. — Tandem Computers, Inc. recently consented to a Securities and Exchange Commission (SEC) order requiring the company to undergo annual reviews of its internal accounting controls for a three-year period.

The judgment entered by the SEC with Tandem's consent stems from a two-year

unpublicized SEC investigation into the company's December 1982 restatement of revenue and earnings. At that time, Tandem restated its fiscal year 1983 financial statement to lower revenue by 7%, or \$23.8 million, and lower profit by 30%, or \$7.4 million.

A Tandem spokesman said the company neither admin-

istered nor denied SEC allegations, but consented to entry of a federal court judgment in order to avoid the time and financial resources that would be required to litigate the charges.

The SEC charged that the company's initial financial statement for 1983, issued in November of that year, knowingly overstated revenue. The SEC also charged that Tandem violated securities laws by failing to maintain an adequate system of internal accounting, as required by publicly traded firms. As part of the consent judgment, Tandem is enjoined from further violations of securities laws.

Suit costs TI \$12 million

DALLAS — Texas Instruments, Inc. announced recently that it will pay \$12 million to settle a class action suit filed by stockholders who claimed that company officers violated federal securities laws.

The suit, filed in September 1983, alleged that TI officers made public statements that misrepresented the company's financial prospects for 1983.

The suit specifically charged that the statements made by the company at its 1983 annual meeting did not reflect the heavy second-quarter losses announced shortly thereafter. TI was reeled by a \$119 million loss in the second quarter, largely due to lagging sales in its home computer division, which was later shut down.

Norman Neureiter, TI vice-president of corporate staff, said four suits containing similar allegations were consolidated under one filed by the Council on Social Work Education, Inc., a New York stockholder. The council could not be reached for comment at press time.

A hearing on the settlement is scheduled for U.S. District Court here in January, Neureiter said. Under the agreement, which is subject to approval by the court, a \$12 million fund would be established to pay eligible claimants.

"TI and the defendants have expressly denied the allegations in the complaint," Neureiter said. "But we have agreed to settle in order to avoid the expense of continuing to litigate and the diversion of management time."

The company said the settlement "will not have a material effect on the earnings or the financial position of the company."

Match this:

Long-term savings on multi-year leases, renewals. plus discounts of up to 30% on lease renewals. ☐

Service professionals in 157 cities. Average service response time in major locations is less than two hours. Nationwide, less than three hours. ☒

State-of-the-art 1500/2000 line permanent hard printers combine high volume output and exceptional reliability. ☐

TeleVisi

seed

quality. Get both a
new TeleVisi

53

COMPUTER INDUSTRY

U.S. positive trade balance declines 26.5% in 1984

WASHINGTON, D.C. — The U.S. positive balance of trade in computers and business equipment continued to decline through the first half of the year, according to an analysis conducted by the Computer and Business Equipment Manufacturers Association (CBEMA).

The positive balance of trade, an amount by which

U.S. exports exceeded imports, dropped to \$2.2 billion in the first six months of 1984.

This decline represents a 26.5% decrease from the \$2.9 billion positive balance achieved during the same period in 1983.

CBEMA's analysis of data provided by the Bureau of the Census projected that to-

tal 1984 exports will value \$16,304 billion and imports will value \$10,806 billion, resulting in a net balance of trade of \$4,498 billion for 1984.

DP imports up 31.7%

U.S. exports of data processing equipment and parts in the first half of 1984 rose by 26.2% over the same peri-

od in 1983 to a value of \$6.5 billion. However, imports of that type of equipment increased 31.7% over the same period.

CBEMA reported that the U.S. maintained a positive balance of trade with all major world areas except for the Far East.

A U.S. negative balance of trade with Japan increased

by 80.8% to \$2.09 billion. In addition, a negative balance of trade with Taiwan increased by 354.9% to \$225.5 million.

U.S. imports of data processing equipment and parts from Japan reached \$1.545 billion in the first half of the year, representing a 57.9% increase over the year-earlier period.

Expecting loss, STC fires 1,500

By David Glimes
CW Staff

LOUISVILLE, Colo. — In a financial setback that may jeopardize Storage Technology Corp.'s (STC) loan agreements with its banks, the company said last week that it expects to report a loss of more than \$20 million for the third quarter.

The manufacturer of storage devices also announced it is firing 1,500 nonproduction employees — about 10% of its work force — suspending work on several projects and cutting officers' salaries by 10%.

The company said it is attempting to negotiate new agreements with its banks, which could conceivably call in the loans and force the company into bankruptcy.

Storage Technology and other companies have been hard hit by price competition from IBM in the market for disk drives for IBM mainframe computers. Minneapolis-based Control Data Corp. announced last month that it was exiting the disk drive market.

Storage Technology last month cut the price of its 5380 disk drive by 10% to \$356,695 to compete with IBM's 5380 system.

Storage Technology said it expects to report a loss in the fourth quarter as well, but projects improved results in 1985.

Earlier this year, the company had predicted a profit for the fourth quarter.

WHAT WE BELIEVE:



COMPUTER INDUSTRY

U.S. chip firm constructs R&D center in Japan

TOKYO — Applied Materials Japan, a wholly owned subsidiary of semiconductor equipment vendor Applied Materials, Inc. of Santa Clara, Calif., recently dedicated a new technology center here.

This technology center is said to be the first major research and development facility that has been estab-

lished in Japan by an American semiconductor production systems manufacturer.

The \$6.2 million technology center, located near the Narita International Airport, was built with the aid of a \$3.4 million loan from the Japan Development Bank, reportedly the first such loan by the Japanese government

agency to a company wholly owned by an American corporation.

Company commitment

James C. Morgan, president of the California parent company, said the technology center reflects the company's commitment to the semiconductor industry in Japan.

According to Morgan, since forming the Japanese subsidiary, sales here have grown from \$2.4 million in 1979 to \$33 million in 1983, or about one-third of worldwide sales.

The company said the 67,000-sq-ft facility contains advanced equipment for processing semiconductor wafers.

Beehive seeks help from court

SALT LAKE CITY — On Oct. 2, terminal equipment manufacturer Beehive International, Inc. filed for reorganization protection under Chapter 11 of the U.S. Bankruptcy Act following problems it had paying suppliers.

Warren B. Clifford, president and chief executive officer of the company, said the company was forced to seek court protection because the company's principal lender, Continental Illinois Bank, would not allow Beehive to use a \$2.5 million loan from another lender to pay suppliers.

Existing debts incurred from suppliers and current operating costs could not be met without additional financing, according to Clifford.

The company expects to continue operations under court protection and to market products introduced this year, Clifford said. It will also continue to provide maintenance services to its customers, he added.

In a move to reduce expenses, the company reduced its work force by 50 employees, or about 20%, and said it took other action to reduce other controllable expenses.



PROGRAMMING IN DECISION TABLES

is a comprehensive and informative book, written in a crisp and clear style, with many examples and illustrations.

The programming language in the examples is COBOL. The methods described are well-tested, and easy to use.

Decision table programs can be tested with great thoroughness, are mathematically verifiable, and require much less maintenance effort than other programs.

This excellent book takes a completely new approach to the use of decision tables in programming.

Order from: Addison Press,
P. O. Box 445, Exton, PA 19341.
Send \$24.50 (add \$1.47 tax in PA)
Outside United States send US \$27



**CA-SENTINEL.
BECAUSE WHEN THE
SECURITY OF YOUR DATA
IS AT RISK, THE WHOLE
COMPANY IS AT RISK.**



COMPUTER ASSOCIATES

WHAT'S BEHIND OUR CONVERSATIONAL TERMINAL MAKES WHAT'S IN FRONT OF IT MORE PRODUCTIVE.

At Teletype Corporation, we just made another intelligent move. We added an integrated modem to the 5410 conversational terminal—making it an even better value.

In addition to saving desk space and being cost-effective, the modem gives the 5410 "built-in" intelligence that greatly improves operator productivity. For example, all the operator has to do is push a single

key, and the modem will dial a host computer and perform the logon operation. And the operator can store up to three phone numbers and logon strings in the modem. Automatic answering is another feature of the modem, which is 212A compatible.

The 5410 is also now available with a white, green or amber Phosphor.

No matter which

color you choose, your operators will appreciate the crisp, easy-to-read characters. High resolution is maintained even when switching from an 80 to 132 column mode.

Other features that enhance productivity include 8 programmable function keys with matching screen labels; an English option menu; a detachable keyboard that tilts from 5 to 12 degrees and has tactile feedback; standard character sets; and the list goes on and on.

In the interest of operator productivity, write to Teletype Corporation for more information on the 5410 at: 5555 Touhy Ave., Dept. 3223-H, Skokie, IL 60077. Or call 1 800 323-1223, ext. 111.

TELETYPE: VALUE SETS US APART.

"Teletype" is a registered trademark and service mark of Teletype Corporation.



AT&T
Teletype Corporation

COMPUTER INDUSTRY

AT&T from page 107

to assume AT&T has a whole new set of products under development," Lower said, adding that some of the 3B machines are actually seven years old.

Jonathan Fran, an analyst with Paine Webber Mitchell Hutchins, Inc., said AT&T's supposed advantage in the communications area could be preempted by advancements in that area by established computer vendors. "AT&T does not have much of an advantage over companies like Digital Equipment Corp. and Wang Laboratories Inc.," he said.

In a recent interview, Robert J. Casale, recently appointed to head up strategy for AT&T Information Systems, said the company is "realigning our objectives in the 3B line." He believes that as a new product line, at least commercially, the AT&T machines are undergoing an evaluation process in the user community and that sales will pick up later this year and early next year.

But if machines that many people consider to be high-priced and aged are just winning acceptance in early 1985, what is going to happen when new products from other vendors come on-line at the same time? "There are going to be big changes in superminicomputers next year," Lower said.

Theoretically, AT&T might be content to just show a presence in the higher end of the market while trying to clean up at a different level, in what Casale pegged as the growth markets: micros, local-area networks and software. But such a selective strategy would not bring AT&T to the level of IBM, particularly in light of the doubts surrounding AT&T's Unix System V strategy.

To ensure AT&T does not end up, in Casale's words, "an also ran," there has to be something more. The questions are: What is it? And when will AT&T drop it on the market?

R&D from page 108

the legislation, forcing a conference committee to reconcile the differences. For example, House and Senate conferees compromised on the controversial issue of whether to award attorneys' fees to the prevailing party in an antitrust suit.

The House version would have awarded attorneys' fees, but the Senate version dropped that provision at the behest of Sen. Howard M. Metzenbaum (D-Ohio), who feared it would discourage legitimate antitrust suits. In the compromise, attorneys' fees are awarded only if the judge finds that the plaintiff's claim or conduct is "frivolous, unreasonable, without foundation or in bad faith."



REPORT from page 112

The report said the principal influence information processing and telecommunications technology will have on services will come in the connection between processing networks, such as automated teller machines. The data processing services and credit card industries have been able to perform many traditional bank functions by offering their telecommunications and information processing systems as gateways to new nonbank financial service providers that want to make use of their extensive in-place systems, the report said. "Communications will be the key to delivering financial services in the future," the report asserted.

A new technology that will affect financial services and will likely

come on stream in the future is the increased processing power contained in large mainframes, the report predicted. Large mainframes will be needed to support applications such as image processing for security checks and voice-initiated payment applications.

"Computer architectures will be increasingly modular. On the one hand, this will make it possible for users to configure systems to meet their specific requirements, while on the other, it will tend to increase system reliability and integrity," the report said.

The report predicted that software costs will continue to climb because very few software development tools are presently on the market and financial firms over the years have already developed a huge body of proprietary software they

will continue to maintain.

The report said only the largest banks and data processing services with hardware and software already in place are actively maintaining processing of large numbers of financial transactions. Most banks' check processing and account maintenance are performed by outside providers.

The report noted, "Even though there is considerable inertia in the form of installed applications systems, new applications in the financial services industry will continue to evolve. In the near term, the emphasis will be on modifying batch applications to operate interactively, where it is reasonable to do so."

New software features, such as system security — a goal that was extensively supported in the report — will be built into financial services products, the report said.

What IBM can't tell you about TSO.

1 How to have Full-Screen Windows into Parallel TSO Sessions with ONLY ONE USER ID.

2 How to use ISPF and TEST on your terminal at the same time to debug, modify source, and browse listings simultaneously.

3 How to have immediate access to multiple ISPFs, INFOSYS, Q/SDSP/IOF, DIDOCS, OMEGAMON/RMFMOM, and more from a single terminal, without entering any commands. Have all your tools instantly available, always.

4 How to cure inconsistent TSO response time by cutting out 90% of non-trivial transactions' overhead.

5 How to have 3 CICSs, 2 IMSs, IDMS, and even another TSO ID running concurrently from your TSO terminal.

6 How to create virtual terminals from TSO to talk to any application on any CPU.

7 How to turn any 3270-type terminal into a "soft 3290" without any hardware changes when you need access to more than one terminal.

8 How to execute multiple TSO commands asynchronously from a single terminal, for instance, EDIT while doing a foreground Assembly.

9 How to have performance monitors for MVS, IMS, CICS (on the same or different CPUs) all display on the same terminal when you need to see everything at once.

10 How to create PC and UNIX-like Directories and Sub-directories of datasets to group datasets logically and access them without typing.

11 How to capture any 3270 display screen to disk. Great for documenting CICS, IMS, IDMS, etc. applications.

TSO can tell you how to do all the above and more and improve overall TSO response time while reducing resource consumption with the PIE family of software products: Sessions, Network Access, File Access, and View. Send for our free TSO Tips & Hints newsletter and learn the latest on TSO and more information that IBM can't (or won't) tell you.

Call us or fill out the coupon and send it to Technologic Software Concepts, Inc., 150 El Camino Real, Suite 216, Tustin, CA 92680, (714) 730-1290.

TSC

— Yes, send me information about TSO and PIE Sessions, Network Access, File Access, and View.
— Call me, I want Full Screen Parallel TSO Sessions.
— Start my Free subscription to TSO Tips & Hints.

TSC Inc., 150 El Camino Real, Suite 216, Tustin, CA 92680, (714) 730-1290.

Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____
Phone _____ CPU(s) _____
VSM volume _____ VSM/TCAM address _____

POSITION ANNOUNCEMENTS

Accountemps puts the pro in edp PROductivity.

There's no longer a reason for data processing work to fall behind—Accountemps professionals are available on a moment's notice. Specialists in systems analysis, programming, computer operations, data entry and even word processing.

Accountemps specialists are the ideal solution when work starts to pile up—when employees are sick or on vacation—or when specific projects must be completed quickly and cost effectively. And because they're slightly over-qualified, they need little or no orientation. They get right to work and finish the job right the first time—and quickly too.

A call to any one of 80 offices in the United States, Canada and Great Britain will bring you the help you need immediately—for a day, a week, a month or longer—when ever you need them—evenings or weekends.

accountemps.
Rent an Expert™

© 1984 Accountemps International Inc. All offers independently owned and operated.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT SYSTEMS ANALYST \$2624 - \$3250/MONTH

The District has 3 current openings for Systems Analysts with strong technical skills and experience in developing systems specifications with user departments. The ideal candidate will have progressive experience leading to project management responsibilities, and experience on HP 3000 using COBOL, RALGE, V-PLUS, etc. Contact the District's Personnel Office at (818) 572-8155 for an application package.

MAINE

We have specialized in data processing professional placement in Maine for almost a 30th of a century. If you qualify for positions in the \$25-50,000 range, please contact us in total confidence. Our clients pay our fees and provide relocation assistance.

ROMAC.
477 Congress St.
Portland, Maine 04101
(207) 773-4748

COMPUTER ENGINEERS

VAX - VMS
INTEL - iRM
MC/CHC - PMS

If you have expertise in one of the above, please would like to hear from you. Our team of factory Automation and Information Systems experts is looking for a few key professionals to help us continue our outstanding growth. If you want a stimulating technical challenge, a very competitive salary and comprehensive company paid benefits, contact us at:

MICROS.
A Subsidiary of Lenth Technology Corp.
5552 East Main Street
Warren, MI 48091
Attn: Personnel Manager

Computer

Immediate Opportunities

The following offer data processing professionals are needed nationally for immediate opportunities.

Data Base Specialists
Data Base Programmers, Designers, and Analysts needed with DBMS, RDB, MCO, ADABAS, PD-CUE, and DMS1100. Salaries range from \$2-42K.

Systems Programmers
Experienced Systems Programmers with IBM, VAX, or DOS experience needed. Salaries range from \$2-54K.

Systems 38
IBM 38 Programmers with System 38 experience are needed at all levels. Salaries \$18-42K.

IBM COBOL or ALGOL
Programmers and Analysts are needed with other COBOL or ALGOL experience. Salaries range from \$18-38K.

Military
Programmers, Analysts, and Systems Programmers needed with prior Military Applications experience. Salaries \$18-42K.

UNIX/C
Positions available for UNIX/C specialists with LAN, Telecommunications, Military Applications, Office Automation, or other applications experience. Salaries range from \$22-51K.

Miscellaneous Experience
IBM PL/I, FORTRAN, Burroughs Univac, DEC, VAX, and Wang VS Programmers are needed. Salaries range from \$18-38K.

For more information call Tom Arnold collect at (201) 448-0488 or send resume to:

J. Randall Associates
P.O. Box 1821
Rockville, MD 20850
Attn: Tom Arnold

EXPERIENCED SYSTEMS PROGRAMMERS, ANALYSTS AND PROGRAMMER WANTED FOR SUNBELT LOCATIONS

225 distribution, consultancy, and insurance, and other major clients to overcome the industry's career growth. Consider new career opportunities pass us by because we are unaware of their existence. Let us help you advance of what your true value is in the market place. Absolutely no telephone, please call or write from Tucson, AZ. Data Processing Specialist

Dunhill
OF CHARLOTTE, NC
6401 Cavalier Road, Suite 107
Charlotte, North Carolina 28226
800-238-2012
(NC Call)
(704) 542-0212

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

ECJ!

At E.C. Jordan, business is booming, bringing incredible growth and creating outstanding professional opportunities. We're a progressive, full service consulting engineering firm of national scope and ranking. With corporate offices in Portland, Maine, E.C. Jordan offers an environment of professional excellence located in a region of great natural beauty and diverse recreational possibilities. Facilities in 5 different cities, plus the opportunities in our Portland office, makes E.C. Jordan a firm worth looking into for the serious professional.

Currently, we are looking for a high level Engineering Applications professional, whose own successes can rival our own. If your talents and experience fit the following positions, consider E.C. Jordan.

AUTOMATED SYSTEMS DIVISION MANAGER

We are looking for a talented and proven professional to take responsibility for the implementation of a master plan to further automate our company. The job includes CAD graphics. You will manage and control the plan once it is set up. In addition, you will assume Equipment Management duties in upgrading our current computer system (IBM 341) to a new, state-of-the-art system. Within Applications and Support Services, you will work with department managers, designing software and making decisions regarding software applications. Finally, your knowledge of financial analysis will allow you to implement and utilize appropriate equipment.

To qualify, candidates should have 5+ years of management experience, with specific experience managing each of the four areas mentioned above. An Engineering degree is preferred but not mandatory. Additional experience should include directing an automated systems equipment operation including systems and personnel, and knowledge of micro-mini and super-mini computers. The successful candidate will be a dynamic and talented top notch professional with proven leadership abilities and outstanding technical expertise and judgement. Knowledge or experience with the Integrated CAD system is a definite plus.

PROGRAMMER/ANALYSTS

You will be indispensable to our Automated Systems Department as well as other departments in facilitating computer use for database functions. Responsibilities will include analyzing and solving software and hardware problems, developing general purpose software solutions using both FORTRAN and BASIC, and specifying and evaluating packaged software and custom software requirements.

This position requires 3+ years' experience in FORTRAN programming/analysis in an engineering environment, with 1 year's BASIC plus. Although a B.S. in engineering is preferred, a B.S. degree in computer science or math may be acceptable.

Individuals interested in the above opportunities should send resumes plus salary requirements, in confidence, to the Director of Personnel.

E.C. JORDAN CO.

CONSULTING ENGINEERS

562 CONGRESS STREET/P.O. BOX 7050
PORTLAND, MAINE 04112 (207) 775-5401

AN EQUAL OPPORTUNITY EMPLOYER

CAREER ADVANCEMENT JUST A FREE PHONE CALL AWAY

1-800-874-9004

CALL FROM 8 a.m. to 9 p.m.
THIS WEEK
10-15-84 to 10-19-84

We want to put you in touch with the career opportunities you have searching for. That's why you can use this unique service to make it easier for you to talk to us. Tapes of positions available throughout the Southwest, Colorado and the Pacific Northwest.

Programmer/Analyst
Systems/Analysts
Project Leaders/Managers
Systems/Managers

Have your resume and background ready and we'll see you take. Please respectfully contact 800-874-9004 or if you can't call, send resume.

Kelly Davidson - Banking, Insurance opportunities.

Gusson Landford - Manufacturing opportunities

Advanced Recruiters INC

P.O. Box 17480
Jacksonville, FL 32245-7480

Senior Systems Professionals

Start-up roles on a major management information system

Booz-Allen is a recognized leader in technology and management consulting. One of our paramount strengths is in the design, development and implementation of management information systems. A new assignment in this field has created a number of significant career opportunities in the Chicago area for established systems professionals.

We are currently beginning a major new system development project. This assignment will encompass the entire system life cycle from requirements analysis through system development and implementation. This is an opportunity to get in on the ground-floor of a state-of-the-art program which will offer significant career growth and opportunity.

Consider your qualifications.

Current openings are for Project Managers as well as Senior and Intermediate Systems Designers. These positions will require five to ten years of proven experience including:

For Project Managers

- Technical and management supervision of teams of at least ten professionals in the design, development and implementation of large-scale data processing systems.

For All Positions

- Significant interaction with clients during all aspects of life-cycle development.

Your functional experience should include one or more of the following:

- System Design
- Applications Design
- Project Administration
- Configuration Management
- Software Quality Assurance

Your technical skills should include:

- IBM MVS
- IDMS/DB/DC
- COBOL
- Structured Analysis and Design Techniques

You must have a relevant undergraduate degree, an advanced degree is a plus.

Consider the rewards.

These positions command excellent salary and benefits packages, and include the stimulation of an unsurpassed professional environment and recognized stature in your field.

Take the next step.

To open discussion, direct your resume to: Mr. R.R. Blackmon, Booz-Allen & Hamilton Inc., 4330 East West Highway, Bethesda, MD 20814. We will arrange a convenient interview at the earliest opportunity.

An equal opportunity employer

BOOZ-ALLEN & HAMILTON INC.

Professional excellence...make a practice of it.

SYSTEM CONSULTANTS
- SAN FRANCISCO AND ALBA -
These positions can bring large Rewards, High Satisfaction, Major Challenges & Tremendous Growth.
"WILLIAMS" EMPLOYMENT OFFICE
HIS, EDMS, CHX, COBOL, ALG, JCL, and Mainframe, Micro and Micro.
LOCAL OFFICES
San Francisco, CA 94102 • Tel. 415-398-1100
San Jose, CA 95128 • Tel. 415-398-1100
San Francisco, CA 94102 • Tel. 415-398-1100

CALIF. & UNIX*
Openings in a variety of areas and disciplines.
(714) 881-4262
COMPUTER PROFESSIONALS
UNLIMITED, INC.
2511 Shattuck Avenue, Suite 200
Berkeley, CA 94704
*UNIX is a trademark of Bell Laboratories.

MOORE & ASSOCIATES
Our computer can help you get more or stay here. Four 24-hour, 24-hour department, 170 different offices, 200+ different jobs, 2000+ temporary users from Virginia to Texas to Florida. Send resume to:
DADA RESOURCES USA
Division of Lorimar Personnel Services
P.O. Box 1576
Parsippany, NJ 07054-1576
CALL TOLL FREE 800-574-9446
IN FL, CO, MD, VA, NY, NJ, CT, DE, PA.

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

RealTimeXerox

A Great State for State of the Art

Software Engineers!

Xerox Has Texas Size Opportunities

Xerox, pioneer in xerography and innovator in the creation of the office of the future, invites you to join our team in Dallas, Texas — one of the fastest growing high-tech centers in the Southwest. Our Information Products Division has exciting challenges for Software Engineers who want a great place for both their lifestyle and their life's ambitions.

TeamXerox is a collaboration of our proven resources and your resourceful mind. And you can be a part of it. We are seeking professionals with the following credentials:

- 1-10 years product development experience with recent experience on IBM/Novac computers with office automation software.
- Must have experience with Assembly language and either PASCAL or C languages.
- A BS or MS in Computer Science is highly desirable.

The successful candidate will apply their software development skills in the following areas:

- PROFESSIONAL WORKSTATION
- ELECTRONIC TYPING
- COMMUNICATIONS

Qualified candidates must have U.S. citizenship or be a registered alien.

TeamXerox in Texas. It's our resources. Your resourceful mind. And a great place for both. Send your resume to: Xerox Corporation, Information Products Division, C016-15 MS-108, 1391 Ridgecroft Drive, Lewisville, Texas 75067. Xerox is an affirmative action employer.

XEROX

SOFTWARE PROFESSIONALS

If you are a software professional seeking to broaden your experience base or take on greater technical challenges, we invite you to investigate these outstanding opportunities.

SOFTWARE ENGINEER

We support engineering efforts involved in the development of new products. This highly technical position requires a BS/BS or MS and 2-4 years experience with microprocessors and hardware/software interface programming.

PROGRAMMER ANALYST

We train and assist users of on-line and PC systems. BS/BS in computer science, mathematics or engineering and 2-3 years experience including experience with IBM personal computer and on-line systems on IBM 3033. Knowledge of FORTRAN and BASIC required.

SYSTEMS PROGRAMMER

We install and maintain the operating system for an IBM 3033. BS degree and 2-4 years experience with experience in the MVS system principles applying maintenance through SMP modifying system parameters to improve performance, installing data base systems, and installing security packages.

We offer competitive salary and other excellent fringe benefits. For confidential consideration, please send your resume including salary requirements to David H. Pearl, Bell Aerospace Testron, Post Office Box One, Buffalo, NY 14240.

Equal Opportunity Employer M/F/H/V

Technology... Bell's response to an ever-changing world.

Bell Aerospace TESTRON

DATA PROCESSING PLANNING ADMINISTRATOR

We contribute the development of strategic and tactical plans related to the implementation of a Strategic Information System. Reporting to the Director of the Information Systems Division, the Planning Administrator will be responsible for the creation and continuing evaluation of strategic system plans. Responsibilities include: planning, analysis, and coordination of strategic system plans; assessment of business, financial, and operational needs; and coordination of the health care industry and its impact on the health care system. The position is a Data Processing Department. The position requires a degree in computer science or business and a minimum of four years experience. The position requires a degree in computer science or business and a minimum of four years experience. The position requires a degree in computer science or business and a minimum of four years experience.

Richard L. Tuller, Director, Health Services Division, Health Care Planning Department, 500 Park Avenue, Suite 1200, New York, NY 10022. An Equal Opportunity Employer.

GULFOAST CAREERS - EMP PROFESSIONALS

- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL
- Mgr. Systems, 24, MARS, PERSONAL

MIS DIRECTOR

Accelerated growth within the leading financial institution in the Nation's Capital has created this opportunity for an experienced MIS Director.

Your primary focus will be directing all MIS activities which will facilitate the revision of existing and establishment of new automated systems and programs necessary for the smooth and efficient flow of information. Areas of accountability include all areas of operations, systems design, programming, maintenance, training of data processing personnel and necessary documentation. Key responsibilities are the identification of long-range goals, planning and implementation of short-term projects to achieve goals and the control of activities to respect budgetary requirements.

We require a minimum of 10 years' experience in a data processing environment, 5 years' experience as a Manager within data processing, a degree in Data Processing or Business Management (MBA preferred), and a proven record of management expertise. You must be an excellent communicator with an analytical mind and the ability to motivate your staff. An up-to-date knowledge of all data processing concepts and techniques is of paramount importance.

We can offer you an excellent salary structure, an extensive benefits program and the opportunity to work with one of today's most established organizations. Qualified candidates please forward your resume, complete with salary history/requirements and background, to Mr. Lisa E. Cohen, Riggs National Bank, 1120 Vermont Avenue, N.W., Washington, DC 20005. We are an equal opportunity employer M/F.

The most important bank in the most important city in the world.

RIGGS

The National Bank of Washington, D.C.

PROGRAMMER ANALYSTS

Progressive quality conscious professional firm engaged in information systems consulting and control programming, requires additional people to continue its rapid growth. Our primary need now is for Programmer-Analysts with experience in one or more of the following:

- MVS: MVS/XA; SAS DB/DC; TR/SPF; DBMS;
- COBOL: COBOL; MARK IV/V

We are committed to professional excellence, so our interest is in the quality of your experience rather than the quantity.

To qualified individuals, we offer an excellent salary and benefits package, including retirement incentives, stock participation and educational loans. We are located in north-central Pennsylvania. This busy area, rich in history, features great scenery, long summers, a diverse mix of living, 50 minutes by car to Washington, D.C. close to excellent schools, outdoor living and generally a great place to raise a family.

If you qualify, call Ken Patten (717) 787-4810, or write to:

COMPUTER RESOURCE ASSOCIATES
1309 Market Street-Suite 3
Lancaster, PA 17603

All replies will be treated in strictest confidence, and all replies will be returned.

CRA

COMPUTER SCIENCE FACILITY POSITION

A PhD in computer science or a related field with 3-5 years of experience in computer science is required for this position. The position is located in a large research facility in the Washington, D.C. area. The position is located in a large research facility in the Washington, D.C. area. The position is located in a large research facility in the Washington, D.C. area.

We are looking for individuals who are interested in computer science and who are willing to work in a research facility in the Washington, D.C. area. We are looking for individuals who are interested in computer science and who are willing to work in a research facility in the Washington, D.C. area.

ALASKA TESTS IN ALASKA - LABORATORY SYSTEMS ANALYST SYSTEMS PROGRAMMER

The Legislative Affairs Agency, located in Juneau, is looking for a Systems Programmer with a minimum of 3 years of experience in a large data environment. The position is located in a large data environment. The position is located in a large data environment. The position is located in a large data environment.

POSITION ANNOUNCEMENTS

ALABAMA

Programmer (S&B)
Developing Organizations
Coastal Development
Eastman Kodak
Birmingham 31000's & 350's

If you are an individual who enjoys the great outdoors and wishes to live in a small town environment, while working in a state-of-the-art office, this is the place for you.

The small community through its county government is located in beautiful, scenic, and historic town. Kodak is one of the fastest growing in the world providing an excellent opportunity for professional growth. As well as an excellent position, the position holder will be responsible for the development of all of the services of a large state government.

Minimum qualifications for the Programmer position include:

Graduate from an accredited high school or GED equivalent, at least 1 year high school graduation experience, and a minimum of 2 years experience in the programming and use of microcomputers.

Minimum qualifications for the Programmer position include:

A minimum of 3 years experience in any of the following: database, development, programming, and use of microcomputers, and have at least 2 years COBOL, and 2 years BASIC, programming and development experience.

System development experience may be substituted for education on a year for year basis.

Minimum salary should reflect salary and salary requirements to:

Kodak Personnel Bureau
 Personnel Office
 Box 800
 Birmingham, AL 35202

SPERRY 1100 SYSTEMS PROGRAMMER

SDK Medical Computer Services is looking for an experienced UNIVAC Systems Software Programmer. Individual will report directly to the Director of Operations and be responsible for EXEC 1100 software and systems utilities. Highly visible position with supervisory responsibilities. Come join a fast-growing, private sector, Boston based computer center for hospitals utilizing a variety of hardware. Opportunity to work with other equipment. Excellent benefits. Send resume to: Personnel, SDK MEDICAL COMPUTER SERVICES, 550 BOSTON STREET, Chestnut Hill, MA 02167.

UNIX®/C

\$25,000 to \$50,000
 APPLICATIONS & SYSTEMS

National Placement Leader
 For UNIX®/C
 800 ORIENTED NETWORKING.

Call or send resume
J. ROGERS ASSOC
 NJ (800) 855-4444

or call 800-220-4999
 150 Franklin Center Rd Dept C-0
 Lawrenceville, NJ 08648

UNIX is a trademark of AT&T.

Welcome to the World of Recognition

SOFTWARE PROGRAMMERS

Recognition Equipment Incorporated is an international leader in the development and marketing of information processing systems.

Due to growth and expanded sales, we have several positions available for candidates possessing 2-5 years computer language programming or microprocessors in any of the following areas: hardware development, distributed processing system development, and large system development. Total experience is desired.

We offer an excellent salary and full benefits package, as well as the opportunity to work in a progressive environment where individual accomplishments are recognized and rewarded. Send resume and salary history, in confidence, to: Barbara Buehler,

Recognition
 Equipment Incorporated

P.O. Box 44804, Dallas Office 22
 Dallas, Texas 75244-0244 • (214) 579-8551

Equal Opportunity Employer, M/F

© Eastman Kodak Company, 1983

Software engineering at Kodak. Putting good things in small packages is one of our specialties.

From computerized manufacturing operations in the production of Kodak disc film to the design and fabrication of output driver chips for business systems equipment, computer professionals at Kodak excel at thinking small.

But Kodak's commitment to computer technology is big. Across the board, we have need for experienced, technically oriented computer scientists and software engineers.

Steady growth and diversification

have created opportunities

in a variety of

areas, from system-level architecture to the development of software for real-time command and control subsystems in complex electromechanical hardware.

If you have the necessary skills and drive to meet the challenge of working for a corporation in the forefront of technology, send your resume today to: Personnel Resources, Eastman Kodak Company, Dept. DCPW, Rochester, NY 14650.

Kodak. The right place. The right time.

An equal opportunity employer manufacturing photographic products, films, plastics, chemicals, and electronic equipment. Plants in Rochester, N.Y., Bangor, Tenn., Windsor, Colo., Langley, Tex., Columbia, S.C., Bannockburn, Ill., and a sales office all over the U.S.

MFG. SYS. ANALYST

This position will analyze and develop new mfg. systems from discrete tech. environ. includes IBM OS mainframes & m/c's & PCs. If you're on a fast-track, this exciting oppo. will enhance your tech. & admin. exp. \$35,000.

COBOL/ BANKING/BAL

This exciting fast-track career bank is one of the leading IBM OS/VS, COBOL, BAL, & report. rapid. team. Get involved with exciting areas of MGR, DDA & item processing interfacing to the project. \$35,000.

ROBERTSON CORP.

150 Broadway Street
 Boston, MA 02111
 (617) 450-1300
 Permanent Candidates

CHAIRMAN, COMPUTER AND ELECTRONICS DEPARTMENT

The Armed Forces Radiobiology Research Institute, a command of the Defense Nuclear Agency, is seeking an individual to serve as Chairman of the Computer and Electronics Department. This Civil Service position directs the design and development of electronic instrumentation and computer devices which advance radiobiology research. Mandatory qualifications include knowledge of high-level programming languages, hardware interfacing, instrumentation-system design, principles of software engineering, and management experience. A desirable qualification is an advanced degree in a physical, biological or computer science. Salary ranges from GS-15 to GS-18. Inquiries to Mr. Ackermann at 202-295-1426. Submit application including SF-171 and resume by November 30, 1984 to: AFRR/CPO, Bethesda, Md 20814-5145. An Equal Opportunity Employer.

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

WANTED VICE PRESIDENT OF MARKETING

To Establish Distribution Channels
With Hardware Manufacturers,
Mass Merchandisers,
Software Distributors, Dealer Networks

FOR C/UNIX APPLICATION SOFTWARE

Operational Today

Order Entry, Invoicing, Accounts Receivable,
Inventory Control, Job Cost, Sales Analysis,
Accounts Payable, General Ledger

Must Have Proven Experience In
These Distribution Channels

Salary, Bonus, Commissions, Stock Options

Write Or Call:

MATTHEW R. MATHEWS



WORLCO DATA SYSTEMS

1021 W. 24TH AVENUE SUITE 100 PUEBLO, CO 81001-2102

City Polytechnic of Hong Kong invites applications for the posts of Principal Lecturer/Senior Lecturer/Lecturer in the Department of Computer Studies and in the Specialisms of: (Technical areas) COBOL, PASCAL, ADA, 4th Generation languages, Data Base, Systems Analysis and Design, Networking, Graphics, (Applications Areas) Finance, Accounting, Banking, Marketing, Manufacturing, Process Control, Education, Engineering, Management. Candidates should have a recognized Bachelor's Degree with relevant professional experience. For appointment at Senior/Principal Lecturer levels candidates should have higher degrees and substantial relevant professional experience. Preference will be given to candidates with a successful research record. Principal Lecturer: HKD227,760 P.A. to HKD282,660 P.A. by 5 increments. Senior Lecturer: HKD192,060 P.A. to HKD248,000 P.A. by 6 increments. Lecturer: HKD168,500 P.A. to HKD183,540 P.A. by 12 increments. Appointment will be made initially on a 2-year fixed-term contract. A 25 percent terminal gratuity on basic salaries received over the entire contract period will be payable on successful completion of the contract. Fringe benefits include long leave, medical and dental benefits and where appropriate house accommodation or housing allowance, children's education allowances and leave passages. Applicants should send detailed resume together with names and addresses of two references who would be able to comment applicant's academic/professional suitability, particularly over the past 5 years, to the General Secretary, City Polytechnic of Hong Kong, 17th Floor, Argyle Centre, Tower Two, 700 Nathan Road, Mong Kok, Kowloon, Hong Kong by 10 November 84.

WE'RE TAPPING AN ANCIENT RESOURCE

The Human Imagination.

More than ever before, Southern California Gas Company is seeking leaders who to expedite the use of energy. Whether it's discovering ways to increase the most of from shale deposits or creating better information systems to streamline business operations, innovation is the key resource of energy conservation.

We're currently looking for innovative computer professionals with imagination, drive and experience in a large R&D machine environment.

SYSTEMS ANALYST

7-10 yrs. experience

We need high-caliber Systems Analysts to define, design and formulate proposals for new systems and/or enhance existing systems. Systems Analysts would also provide work direction and technical counseling for individuals in a results-oriented D.P. department.

COMPUTER PROGRAMMER

3-3 yrs. experience

As an experienced Computer Programmer, you would develop and maintain on-line and batch programs; test and debug programs and systems. We are interested in programmers with 4 year degrees in Computer Science, Business or Accounting and a minimum of 2-3 years experience with large IBM mainframe computers.

SR. PROGRAMMERS

4-6 yrs. experience

Senior Programmers are needed to coordinate team activities; test and debug programs; implement and support business systems. Responsibilities also include writing program instructions and complete technical programs.

DATA SECURITY COMPUTER PROGRAMMER

2-3 yrs. experience

You will maintain and assist in the administration of the Company's data security system which provides protection to its computing and data resources. In addition, you will develop and test batch and on-line programs. Duties include the control of user logons; the protection of user orientations and training support; and the review and analysis of daily security activities reports. Familiarity with (ACF2) security software is highly desirable. Security clearance will be required.

The above positions all require a 4 year technical degree; proficiency in COBOL, DB-JCL, TSO (BPP), and familiarity with CICS applications.

DATA BASE SPECIALIST

3-6 yrs. experience

We need a high caliber Data Base Specialist to be responsible for data base design, systems analysis, and applications development for one of our affiliate companies.

We're looking for someone with a 4 year degree and 2-6 years experience performing systems analysis, data base design and applications development.

IT IS ESSENTIAL THAT YOU HAVE KNOWLEDGE OF OIL AND GAS ACCOUNTING SYSTEMS.

You will be using Rami II as a primary information tool, so prior experience with Rami II applications is desirable.

Candidates should have effective spoken and written communication skills. U.S. Citizenship or permanent resident visa is also necessary.

Please submit your resume and salary history in confidence to:



Professional Staffing Coordinator
ML 363H

P.O. Box 3349 Terminal Annex
Los Angeles, CA 90051

The Senior Support, Instrumentation Systems Software Company is looking for people motivated with computer operations background for software and sales support of engineering software products. Requires degree of the operating systems UNIX and C programming. Salary range \$20,000 to \$30,000 per year. Send resume to: Senior Support, Instrumentation Systems Software Company, 10000 Wilshire Blvd., Suite 1000, Beverly Hills, CA 90210. No phone calls, please.

Apply at the Texas Management Center, Inc., 1000 Wilshire Blvd., Suite 1000, Beverly Hills, CA 90210. For more information, call 213-277-1111, ext. 1000. Equal Opportunity Employer.

UNIX®

National Registry of
"UNIX" job
offerings & professionals

P.O. Box 16840 Dept. CBU
Houston, TX 77224

Please send resume to:
National Registry of
"UNIX" job
offerings & professionals

California based companies willing to sponsor qualified candidates for H-1 Visa for Systems Programmers with CICS, MVS, VTAM and SAS. You must have at least five years experience in systems programming with decades and spoken English skills. Local interviews will be conducted in Fresno, Texas, and Hong Kong from November 12th to 20th. To arrange for a free interview send your resume to: On-Line Professional Search, Inc., 2447 Capital Lane, Alameda, CA 94501, USA.

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

SYSTEMS PROGRAMMERS

work with an
Industry Leader!

If your ability and expertise in large scale IBM systems has surpassed the challenge of your present position, this opening with exceptional opportunity for advancement should interest you!

Mutual of Omaha Provides:

- The prestige of working with the world's largest individual and family health insurance company, located in Omaha, Nebraska, a clean, progressive medium-sized city.
- State-of-the-art hardware (Multiple 3084's)
- State-of-the-art software with over two hundred products, including: MVS/XA, ACF/VTAM, IMS 1.3 and CICS.
- Extensive training to build skills and keep you abreast of the latest developments in hardware and software.
- Competitive, performance oriented salary and outstanding benefits.

If you have proven skills on large scale IBM systems and a minimum of two years systems programming experience, we would like to talk to you about an outstanding opportunity with a leader in the insurance industry.

Call Don Kingsbury collect at (402-976-5168) or mail your resume in strictest confidence to his attention. We are looking forward to hearing from you.



People you can count on...

Mutual of Omaha Insurance Company
Mutual of Omaha Plaza • Omaha, Nebraska 68175

Equal Opportunity Employer M/F

CAPACITY PLANNING AND TUNING

Southern California

Litton Computer Services, a division of a Fortune 500 company, is one of the nation's leading data processing organizations, an independent computer services company, innovative and responsive to the needs of both government and private industry. We operate the latest IBM CPUs (we have two 3081s, and a 4341) and equipment, and our plans include MVS/ESA. Due to our exceptional growth rate and aggressive expansion, we have an excellent opportunity available.

Required experience includes tuning, performance and capacity planning knowledge, with a minimum of 3 years experience in an MVS/ESA environment using a combined knowledge of RACF, OMVS/ESA, DECK and CDF. BS in Computer Science is necessary, however, applicable work experience may be substituted. Prior systems programming experience also required.

Litton Computer Services is conveniently located in Woodland Hills, where you can enjoy an incomparable climate and the relaxed atmosphere of suburban Los Angeles living as well as easy access to one of the nation's largest metropolitan areas. In addition, we offer the chance to work with the latest state-of-the-art equipment, a complete benefits package, and a friendly atmosphere conducive to both personal and professional growth. If you would like to join an aggressive, growing organization, send resume with SALARY HISTORY to:

Walter Carlson

Equal Opportunity Employer M/F/H



Computer Services

ENTRY EXCHANGE

Interra Inc., a dynamic marketer and developer of manufacturing and financial applications software (IMA, PCD/MS) supported by the latest IBM technology, is seeking outstanding individuals as:

APPLICATIONS DEVELOPMENT PROGRAMMERS

Assist with the development of integrated business information applications software. At least three years experience with RPG II required with an understanding of IBM I/VS/2 platform. Exposure to IBM COBOL, CICS, and JCL system software also desired.

TECHNICAL SUPPORT

Assist with the creation of software documentation and user manuals for business applications software. Experience with IBM I/VS/2 or RPG II required.

To be considered as an additional member of this exciting team, please submit your resume with salary history to the Equal Opportunity Employer by 10 October 1984.

APPLY TO:

Interra Inc.
1110 Robinson Road
Suite 1000 • St. Louis, MO 63111-1110
Phone: (314) 435-1178
EQUAL OPPORTUNITY EMPLOYMENT

E.D.P. AUDITOR

Outstanding career opportunity for major Upstate NY firm, enterprise. Work with 5 user areas; evaluate/document internal controls in software/hardware sys. Req. min. 2 yrs. exp. & degree in Acctg., C.S. or Bus. Need exceptional interpersonal skills. Very good work to related, easy living area. To \$35,000.

ROBERT SORAF
OF BUFFALO, INC.

401 Main Street
1310 Liberty Building
Buffalo, NY 14202
(716) 851-6601
Personnel Agency

Data Base Administrator

Fortune 500 company with revenues exceeding 2 billion is seeking an experienced professional to join its data base staff.

This person will be involved in the design of new data base applications as well as providing data base related assistance to end users. Our progressive Information Services Department uses state-of-the-art tools in a multiple large-scale CPU environment.

Should have a minimum of 3 years data base experience. DBMS or CODASYL data base experience is preferred.

Please forward your resume and salary history to the Employee Relations Division in confidence.



Central and South West Corporation

P.O. Box 22084 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than \$2 billion. With corporate headquarters in Dallas, CSW serves more than four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

Equal Opportunity Employer

DATA PROCESSING EXCELLENCE

We have immediate openings available for talented experienced programmers in a variety of Fortune 500 Companies with operations throughout the U.S. These positions are full time and we will consider seasoned or contract arrangements.

PRIORITIES

- DBMS, CICS Programmers \$25-40,000
- DBMS, CICS (insurance background preferred) \$25-40,000
- Project Leaders with 8-10 years Data Processing experience on IBM, HONEYWELL, BURROUGHS, DEC, or VAX \$30-40,000
- COBOL, TSO RPF and RVC JCL on large scale IBM equipment - 2 years experience \$30-40,000

SEND RESUME TO:



P.O. Box 16886
CLAYTON, MO 63105
(314) 831-4364

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

Senior EDP Auditor

Large electric utility corporation with centralized data center and four remote sites is seeking an experienced Senior EDP Auditor. Job responsibilities include:

- Participate in development of annual EDP Audit Plan
- Prioritize and schedule assigned audit projects
- Plan and accomplish or supervise accomplishment of assigned audit projects
- Review fieldwork performed by subordinates
- Prepare or review resulting audit reports.

Should have professional certification and B.S. in Computer Science or business related field with minimum of three years EDP Audit experience in an MVS environment utilizing ACPE, TSO, ROLCOE, CICS and IMS.

Please mail resume and salary requirements to the Employee Relations Department. Principals only.



Central and South West Corporation

P.O. Box 220154 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than \$2 billion. With corporate headquarters in Dallas, C&SW serves more than four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

Equal Opportunity Employer

COME SHINE WITH US IN FLORIDA

If you believe your career is on the RISE...
If you are interested in a challenging opportunity...
If you are looking for a dynamic, state-of-the-art environment,

Meet a company that has earned a reputation for innovation and excellence, one of the nation's growing fast-moving companies in the South-Fla. We are the Information Systems and Data Processing subsidiary of Sun Bank, Inc. with 28.2 billion in assets, more than 250 banking offices throughout Florida, and one of the largest T/M Networks in the nation. Currently we have the following position available:

DATA BASE ADMINISTRATOR

You will have responsibility for data base design and implementation and will contribute significantly to the definition of our on-line architecture. Other functions include: maintenance and space management and managing a group of four.

SENIOR PROGRAMMER/ANALYSTS AND DESIGNERS

We are seeking Senior Programmer/Analysts and Designers for our Branch Delivery and ATM Systems. Individuals will work in an MVS environment with multiple 300's utilizing IMS DB/DC. Interfacing with the host are TANDOL TAPs and a Branch Delivery System utilizing IBM 4380 Controllers. These positions require development experience in any of the following:

- TANDOL COMPRISES LAMSD TAI
- BRANCH DELIVERY CONTROLLERS
- IBM DB/DC USING COBOL

Complete benefits, competitive salary, equal working practices and tuition-minded management are all part of the Sun Bank package passed to the right-new professionals we seek.

Please send resume in confidence to: Sunbank Service Corporation, Jim Madden, Dept. CW, 2300 Premier Pkwy, Orlando, FL 32802

An Equal Opportunity Employer M/F/H/V



Join The Professional

Beyond the mind's eye...

There's a dimension to Crum and Forster you may not know. We've gone above the line. Our MVS/XA shop offers the latest software such as Chessgram, CICS 1.6.1, and an MVS/VSAM library. Located in our near-complete, brand new computer facility... it spans 37,000 sq. ft. plus! Large enough to house the biggest ideas. And with each new advancement, we become even more sophisticated.

It's amazing what can happen in curious and enterprising high tech professionals when given the opportunity to tap inner resources and make new discoveries. They simply excel. The possibilities for expansion and for career development are endless. You just have to look beyond the mind's eye to see them.

NETWORK:

NCC Manager

3 years Network Control experience in a large mainframe environment. Should be familiar with SOL/RSC protocols, CICS, NCP, VSAM/NCP, MVS, TSO, INFORMATION; 3070 family of terminals and DECNET. Should have and user support and proven organizational skills. Will manage a minimum of 10 people. The anticipated network expansion will provide a seasoned manager with the opportunity to build a Network Control Center of the future.

Network Technicians

2-3 years experience in operations network utilizing VTAM, NCP (NCP/NCP) and CICS MTO. We also seek individual experienced in telephone, modem and line-end processor circuit installation, as well as problem determination, installation and coding experience with digital and analog patch panel equipment is necessary. Successful candidates should be familiar with IBM protocols.

SOFTWARE:

CICS Systems Programmer

Successful candidate will be well versed in all aspects of CICS, SMP and MVS operating systems. Experience with EDAM and/or VTAM, plus good oral and written skills desired.

MVS Systems Programmer

Experience with MVS/SP or MVS/XA operating systems in a large environment required, as well as JES 2, TSO, MVS/EXTS and SMP software package installation/maintenance with IBM and OSM products experience also desired. Knowledge of 3080 processors, 3090, 3080 DASD is beneficial. Finally, a proven ability to perform problem diagnosis and root dumps is necessary, as is user support experience.

VTAM Systems Programmer

Knowledge of VTAM/NCP architecture and protocols required, as well as NCP GEN process. Familiarity with BSA hardware, especially 3070 family of terminals and SOLC protocol. Problem determination and resolution a must. Ability to work with others is important, as are good verbal and written communications skills.

If You Possess These Skills Insure Your Future By Calling Us At (201) 285-7110

Or forward your resume for immediate consideration to: Personnel Manager, Dept. 7, Crum & Forster Corporation, 360 Madison Avenue, Manhattan, New Jersey 07060. An equal opportunity employer m/f/h/v

Crum & Forster Corporation

a Xerox subsidiary

DALLAS

SYSTEM SOFTWARE PROGRAMMERS - Data are your expertise in these areas: COBOL, BASIC, FORTRAN, MVS/VS, PL/I, and C. We pay you to learn. Send resume to: Dallas, Texas 75201. Equal Opportunity Employer M/F/H/V

2700 Westview Pkwy. 1307
Dallas, TX 75201
DATA PROCESSING CAREERS

DATA SYSTEMS PROGRAMMER/ANALYST - State of Wyoming. Requires two years of experience as Data Systems Programmer/Analyst. Location: Cheyenne. Salary Range: \$18,000-\$25,000. Obtain and submit an official application form to Wyoming State Personnel Division, Emerson Bldg., Cheyenne, WY 82002-0060, no later than November 16, 1984.

EQUAL OPPORTUNITY EMPLOYER

FACULTY FOR BSHOE AND AINS

The University of Maryland Eastern Shore seeks faculty to teach undergraduate Computer Science courses. Requirements: M.S. in Computer Science or equivalent. Salary range: \$18,000-\$25,000. Submit resume to: Dr. Robert A. Ainsworth, Department of Computer Science, University of Maryland Eastern Shore, P.O. Box 38, Pocomoke, MD 20686.

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

PROFESSIONALS INSURANCE SOFTWARE DEVELOPMENT

Have you ever considered Informatics General Corporation? Why not send us a resume before you make a decision - if you have three or more years of:

- ALC and/or COBOL
- CICS a plus
- Life or group insurance programming expertise
- Systems development experience

\$200 million strong, we are the leaders in software development, our growth is spectacular, our working environment is really people oriented and benefits are excellent. Here are some openings we'd like to talk about with you.

CICS Systems Programmer - Take over total responsibility for CICS in an MVS/SP 1.3.2 environment; enhance CICS function; generate new CICS releases; provide tuning and create highly responsive CICS systems; establish and document standards and procedures for Data Center users and Computer Operation.

Senior Analyst Programmers - Join our state of the Art development team in an exciting program to produce and market our new product - The Financial Manager. Life insurance programming background necessary; special background in Billing and Collection, New Business Systems, or Control Systems helpful; CICS a definite plus.

Call or write and let's talk more about you. Ask for Lee Lowry, Staffing Specialist, at (214) 231-1400, ext. 463.



9441 LBJ Freeway
Dallas, Texas 75243

Equal Opportunity Employer m/f/h

ACP/PARS PROGRAMMERS

PIEDMONT

- THE UP-AND-COMING AIRLINE -

is staffing for its new Reservations Computer System Facility in Friendly, Winston-Salem, North Carolina, one of the nicest places to live in the U. S.

ACP/TPF Systems Programmers -
PARS Applications Programmers -

THIS IS A GROUND FLOOR OPPORTUNITY
IN A START-UP OPERATION.

Top salaries, travel privileges, excellent benefits!

Come Grow With Us!

Write in confidence to:

Ted Celestine
Reservations Computer Systems
Piedmont Airlines
5636 University Parkway
Winston-Salem, North Carolina 27106

Or Call:

1-888-ACP-TPE1



EQUAL OPPORTUNITY EMPLOYER

Data Processing Professionals

Sierra Systems Consultants Inc., an international computer consulting firm, has been specializing in consulting and commercial applications development for medium and large organizations for over 18 years.

We are currently involved in many assignments where we have been given responsibility to implement large on-line data base systems for our clients. A strong emphasis is placed on providing high quality services for our clients. In this regard, we have developed applications software engineering and project management guidelines, which help our staff deliver cost effective high performance systems.

As a result of our continued business expansion, we are looking for a number of senior data processing professionals to participate in our client projects. Selected candidates will be challenged with new systems development projects, solving complex business systems problems. Applicants must have in-depth working experience in major systems development using one of the following: IMS DB/DC, CICS, IDMS, ADA-BAS, TSO, Model 204, NOMAD, FOCUS, COBOL, BAL, System 38 RPG III, IBM Series 1.

Sierra offers competitive salaries and a comprehensive benefits package, including continued education and a substantial profit sharing program. If you are interested in sharing our growth in these project-oriented positions, please send your resume in confidence to the branch location of your choice. An equal opportunity employer.

Barry Madrid
Sierra Systems Consultants Inc.
2029 Century Park East, Suite 500
Los Angeles, CA 90067
(213) 277-2927

Joe Tirado
Sierra Systems Consultants Inc.
601 Montgomery Street, Suite 1900
San Francisco, CA 94111
(415) 789-5898

Richard Nortnik
Sierra Systems Consultants Inc.
3801 E. Florida Avenue, Suite 400
Denver, CO 80210
(303) 691-2431

Dore Sillaway
Sierra Systems Consultants Inc.
14755 Preston Road, Suite 600
Dallas, TX 75240
(214) 239-4951

John Garrison
Sierra Systems Consultants Inc.
16000 Christensen Road, Suite 314
Seattle, WA 98168
(206) 248-3377



**SIERRA
SYSTEMS CONSULTANTS INC.**

WINTERIZE YOUR LIFESTYLE... COME TO THE SOUTH!

The following is a listing of only a few positions available to you in Florida and throughout the Southeast:

**SYSTEMS
PROGRAMMING**
MVS or CA To \$40's
IMS To \$40's
CICS, VTAM, MCP To High \$30's
RM To High \$30's

**APPLICATIONS
PROGRAMMING**
ASA, General Ledger To \$30's
CICS To \$30's
IMS To \$30's
IMS, ADRO To \$30's
CIC BASC To High \$30's
COBOL To High \$30's

Come to one of the fastest growing areas and enjoy the lifestyle while still earning your career. Call or write Dave Mitchell at:

**FRANK LEONARD
PERSONNEL**
1911 N. W. 10th Ave., Suite 200
Miami, FL 33136
(305) 875-1888
An Equal Opportunity Employer M/F

CHALLENGING CAREER OPPORTUNITY IN SAUDI ARABIA Data Processing Manager

Data Processing Manager with minimum experience of at least 5 years in:

1. COBOL Programming, Systems design and systems analysis.
2. Wholesale Grocery experience especially in warehouse application or other wholesale warehousing experience (for example spare parts). Prior experience in food retail company.
3. Knowledge of N.C.R. equipment would be helpful.
4. Experience with accounting applications - general ledger, payables and receivables.
5. Current position should be project leader, for instance team leader or program manager.
6. College degree in Business preferred.

Salary will be U.S. \$5,000.00 take home. All taxes or deductions in Saudi Arabia to be borne by us. U.S. law enforcement tax only for U.S. City 75,000.00 or over for Americans working abroad. Free accommodation, private car, medical insurance for family in U.S. and all medical care in Saudi Arabia to be paid by us.

30 days vacation paid after 12 months of service with economy class round trip to U.S.A.

Ronnie Rigney
International Sales
Super Foods Services, Inc.
P.O. Box 31088
Orlando, FL 32802

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

DMS/VAX Professionals

Put your expertise to work for a leader in information technology.

Harris is a Fortune 500 Corporation with sales of \$2 billion and Florida's largest industrial employer. Government Systems, the largest business sector of Harris, produces custom communication and information processing equipment for the U.S. Government and a variety of commercial applications.

IDMS

Our Business Systems Department responds to our IDMS needs utilizing SASE, SASE, and SASE Hardware and IDMS (IDMS, ADP-1, and fourth generation languages. Sustained growth has created several openings for individuals with IDMS experience.

PRINCIPAL SYSTEMS ANALYST

We seek an individual with experience in data base administration. Duties will include data resource planning, data base structure, and data dictionary administration. Applicants should possess at least 8 years of experience. 4 of which should be in IDMS terminals. IDMS hardware and software experience as well as good communication skills are needed. A BS in Computer Science or its equivalent is desired. An MS is also preferred.

PROGRAMMER/ANALYST

Your duties will include subsystem design, program design, on line coding, data base update and retrieval programs. In addition, you will be responsible for high level language reports and the analysis, design, coding and implementation of large scale software development programs. Responsibilities include strong technical skills in COBOL and IDMS, experience in high level languages, a BS in Computer Science or its equivalent and 2 years of related experience.

VAX/Harris

The Computer and Communication Systems Department utilizes Harris 8800 computer systems and VAX 11/780 computer systems to support program requirements. Due to continued growth, an excellent opportunity exists for the following professional:

SYSTEMS PROGRAMMER

These individuals interact with operating system operators, provide informal supervision for operators and maintain OS and system performance. Requirements include FORTRAN and MACRO programming under VMS or experience on Harris computers as well as a BS or its equivalent. Experience with CATHYREVE, CME, DMS - 32, and FMS is highly desirable.

Harris offers an excellent compensation/benefits package, a formal merit review program, and a beautiful Melbourne, Florida location. Harris offers an attractive cost of living with affordable housing and no state or local income taxes. Send your resume in confidence to: Jeanette F. Bristol, Harris Corporation, Melbourne Division Support Operations, P.O. Box 37, Dept. CW, Melbourne, Florida 32902.

We are an equal opportunity employer M/F/H/V



HARRIS

IF IT'S HAPPENING IN ELECTRONICS,
IT'S HAPPENING AT HARRIS.

National People Storage

People Storage is a leading national provider of temporary and permanent personnel services.

NEW ENGLAND

MANAGEMENT	\$45,000
SALES SYSTEMS	\$27,000
PROJECT MANAGER	\$24,000
MS/11-AM/SC	\$24,000
SE, MS/11/12	\$24,000
MS/11-AM/SC	\$24,000
SP 3000, IMAGE, QUERY	\$24,000
FORTRAN	\$24,000
SQL AUDIT	\$24,000
COBOL, PL/1, BASIC	\$24,000

LEAHY & COMPANY

Jerry Leahy
88 Broad Street, Suite 801
Boston, MA 02109
Telephone (617) 423-4488
Personnel Consultants

ATLANTA

INSURANCE POSITIONS
\$30,000 to \$45,000

Need several Senior Programmer/Analysts and Application Developers for IBM Shops. Position Openings Paid.

Send resume to:
EDP Consultants, Inc.
3087 Bunker Hill Road
Suite 204
Marietta, Georgia 30062
404-871-7261

DATA PROCESSING DIRECTOR

For Lehigh County located in Northeast Pennsylvania with a population of 275,000 responsible for supervising a computer center department. Must have experience in IBM, VAX and other computers, and must be able to design systems in a fourth generation language. Excellent compensation and excellent benefits offered. Four year degree and three years experience in data processing in related field. Salary commensurate with qualifications. Send resume to Lehigh County, Data Processing Director, P.O. Box 1984, Lehigh, PA 18201.

John P. Foster, Personnel
Lehigh County
P.O. Box 1984, Lehigh, PA 18201
610-781

WHY NOT IMPROVE YOUR CAREER & LIFESTYLE IN SUNNY FLORIDA?

CAP Gemini DMSO, the World's largest privately held consulting firm, offers you the opportunity to join our team. Career challenge, excellent benefits, and great Florida combined with the thought only Florida offers can assure you of the professional and personal satisfaction you'll receive.

We are now accepting applications for experienced PROGRAMMERS, PROGRAMMER/ANALYSTS, SYSTEMS/ANALYSTS, and PROJECT LEADERS with the following skills:

MS DMSO
COBOL (Commercial & Mainframe)
IBM AS/400
FORTRAN
PL/1

MS/11-AM/SC
MS/11-AM/SC
RAMP
RAMP
RAMP

Qualified individuals should contact David Heister at (313) 273-0000, in Florida toll free 1-800-285-4780 or submit your resume to:



100 W. Kennedy Blvd., Suite 801
Tampa, FL 33606

All inquiries held in strictest confidence.
Equal Opportunity Employer m/f

COMPUTER WORLD

The Recruitment Connection...

... the best connection to have when you are looking for quality computer professionals. There is a good reason why COMPUTERWORLD is the number ONE computer industry trade newspaper. No other newspaper of its kind can give you the broad exposure that you will get by advertising in COMPUTERWORLD. It is read by over half a million people, most of them top notch professionals with top-notch computer companies.

COMPUTERWORLD

publishes every Monday and the deadline for receiving your advertisement is always ten days prior to the issue date desired. The open line rate is \$9.15 per line with a minimum size of 2 column inches. Send in your camera-ready material or clearly typed copy with a layout if desired. We also have a telecopier service and ad takers who will gladly take copy over the phone.

Our mailing address is:

COMPUTER WORLD
Classified Advertising
375 Coastline Road
Box 890
Frammingham, MA 01701

Or call for more information at 1-800-343-8474 or, in Mass. (617) 879-0708

COMPUTER WORLD
The best connection to have. The only connection you'll need.

DIRECTOR, DATA ADMINISTRATION

Capitalize On Your Expertise With An International Insurance Leader

As one of the nation's largest insurance organizations, American International Group's global operations provide a broad and diversified spectrum of products and services to clients around the world. At present, we have a need for an experienced Director of Data Administration to assume responsibility for the management of information resources within our domestic branch offices.

Primary functions of this position will include: maintenance of strategic data plan and latest data models to support day to day operations and decisions; detailed data analysis of current information requirements; implementation of a Data Dictionary and Data Modeling Software; coordination of efforts with business systems planning, applications, data base administration, and information center.

The successful candidate will have a broad management background with solid data base and general insurance experience.

AIG provides a generous compensation package including attractive salaries and complete company paid benefits. Send your resume, including salary history and requirements, in confidence to: F. DAMICO, PERSONNEL DEPARTMENT, 4TH FLOOR, AMERICAN INTERNATIONAL GROUP, INC., 72 WALL STREET, NEW YORK, N.Y. 10270. We are an equal opportunity employer m/f.

American International Group, Inc.

We are a leading growth leading manufacturer of medical diagnostic products and have an immediate opportunity available for an

Scientific Programmer Analyst

Requirements include at least 3 years' scientific programming experience, preferably in an industrial environment. Knowledge of VAX 11/70 (DMSO) is preferred but not required. Knowledge of FORTRAN or Basic plus 3 would also be preferred.

Company offers competitive salary and a comprehensive benefits package. Please send your resume in confidence to: Technical Consultants Division, 400 Memorial Drive, Cambridge, MA 02139. Attention: Tech Park Personnel.

An affirmative action employer m/f/h/v

Clinical Assays

Therapeutic Genotoxic Diagnostics



PROGRAMMER/ANALYST

CPA Inc., an established data processing consulting firm, has several openings throughout the Northeast, Midwestern, and Southern United States. We are seeking experienced programming professionals.

CPA is currently looking for individuals with the following skills: IBM AS/400, PL/1, COBOL, and BASIC. Send resume to: CPA, 1000 3RD AVE, SUITE 100, NEW YORK, NY 10022.

Personal Dept.
CPA Inc.
P.O. Box 11208
Chattanooga, TN 37401

Submissions invited to reply

SUNSHINE CONNECTION

Several hundred openings available throughout Florida in the Sunshine State.

All positions Paid. Our clients, in various areas of the state, are in need of experienced individuals to fill a variety of positions. Please send resume to:

CONNECTION THROUGH PROGRAMS
1000 1ST AVENUE, SUITE 100
MIAMI BEACH, FL 33139
DATA BASE ANALYSTS
"Sunshine in Spring"

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

System Security Analyst

Data Security

We are currently seeking a person with six years of progressive data processing experience to join the System Security Group of our Information Services Department.

Administration of Data Security procedures in support of SYSS, VM/CMS, CICS, and IDMS will be the primary job responsibility. Other responsibilities will include Physical Security administration and Change Control administration.

Experience should include:

- ACF2 products or Data Security products
- IBM OS/360, and Utilities
- Data Processing Security procedures implementation.

Please send your resume to the Employee Relations Department. Principals only.



Central and South West Corporation

P.O. Box 22094 • Dallas, Texas 75222

Central and South West Corporation is one of the nation's leading electric utility systems, having annual revenues of more than \$2 billion. With corporate headquarters in Dallas, CSW serves more than four million people through its operating companies in Texas, Oklahoma, Arkansas and Louisiana.

Equal Opportunity Employer

For over 14 years, Analogic has specialized in discovery, innovation, expansion. At the same time, we've encouraged our highly talented professionals to utilize their capabilities to the fullest with an environment that emphasizes a creative, inventive approach to their area of specialization.

Senior Programmer Analyst - Manufacturing

Multi-division electronics manufacturer requires senior programmer analyst with 3-5 years' experience. Hardware environment is NCR Criterion with Tran-Pro and TOTAL data base. Selected candidate will provide interface between programmers and user departments, and handle some programming tasks. Recent experience in manufacturing systems with in-depth knowledge of MRP, Inventory Control and Production Scheduling a must. Experience with NCR MISSION packages a definite plus. Good communications skills required. Degree preferred, but will consider equivalent experience.

For the above position, send resume to Patricia Murphy, Analogic Corporation, Danvers Industrial Park, Danvers, MA 01923.

ANALOGIC

Systems Programmers

Plan A Logical Move

Consider The Advantages of Working For a Leading Vendor of 4th Generation Software Products

Knowing how innovative systems programmers' work best has made D&B Computing Services a leader in database management software. We don't burden our people with bureaucracy or business formalities. We know great ideas don't always come between 9 and 5.

You see, we believe a systems programmer's toughest challenges should be developing creative systems. Not trying to free them from level upon level of red tape or approval delays.

So, we've broken down the barriers between programmer and machine typically found where software is not the business, but ancillary to it. Because software is our only business, we provide the resources and environment which enable our systems professionals to realize their true potential.

On our staff, you'll contribute to the entire development cycle—the design, testing, documentation and maintenance of systems software.



Current new projects include: design of a new micro DBMS; creation of screen driven prototypes to improve the man-machine interface; and enhancements to our Namad-2 Information Center product. And, in all cases, we'll ask you to put your imagination & creativity first.

So, if you're confident in your systems programming abilities; have strong IBM Assembler skills and knowledge of OS, DBMS, or compiler internally; and, have had some exposure to VM or MVS operating systems—we want to talk to you.

If you can imagine the difference working for our software company, we'd like to hear what you think. Because, after all, letting systems programmers think has put us years ahead of other companies in the development of software technology.

To learn more about these opportunities in our Wilton, CT headquarters send your resume, in confidence, to Bob Oniz, 187 Danbury Road, Wilton, CT 06897.

D&B Computing Services

A company of
The Dineen-Walsh Corporation
Equal Opportunity Employer M/F/H/V

UNITED STATES DEPARTMENT
OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
8 DP SYSTEMS MANAGERS
(84-14 842,727 - 863,626)
Royalty Management Program
Lawrenceville, Colorado

—Data Base Administrator

Directs a staff of ten gathering, defining and operating system software requirements. Requires direct working knowledge of current software technology, computer ability and ability to deal with user community and to coordinate the work of several project teams working in several different systems.

—Chief, Systems Development

Directs a staff of three performing maintenance of production software, testing and operating system, future and existing systems functionality. Requires ability to monitor the capacity, performance and usage of systems to interface with user community to direct operational integration testing and to coordinate the work of several project teams working in several different systems.

Both positions are involved with three centrally developed, integrated, computer oriented systems which are used for resource production and revenue collection under terms administered by the U.S. Department of the Interior.

For information, contact Royalty Policy, Mineral Management Service, Personnel Division, 165-224, 15000 Spruce Valley Drive, Denver, CO 80226 (773-636-6000)

An Equal Opportunity Employer

PROGRAMMER/ANALYSTS

Innovative ground floor opportunities for DP professionals with IBM or UNIVAC backgrounds are available in Richmond, Virginia. If you have 2-10 years experience using one or more of the following, we would like to talk to you:

IBM
ALC
REBUS

IBM/AC
MATH/STAT/STAT

UNIVAC 1160
COBOL
UNIV 1160 TSP
CPS/COMP

The projects involve applications design, development, enhancements and trouble-shooting on diversified systems. We need self-motivated individuals who enjoy high visibility and direct client contact.

PRINTER offers exceptional compensation and benefits with relocation assistance. For more information, please call PHILIP GORDON, COLLECT at 703-522-5071 or send resume to:



PRINTER
Purkiner Consultants, Inc.
2021 Leesburg Plaza, Suite 405
Bellaire, Texas 77401, Phone 282-8111

Equal Opportunity Employer/Minorities Only

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

GENIUS

It's not just convenience or convenience, neither and even for challenge, that it means the performance of GENIUS. If you measure these characteristics, we can help you choose the assignment you want with the location of your choice.

GENIUS provides professional, friendly and professional opportunities, without geographic limits. The majority of people who join our ranks have a minimum of 15 years' experience in data processing and management in any combination of the following:

ADMINISTRATIVE PERSONNEL	DATA ENTRY	FILE MGMT	SYSTEMS
ACCOUNTS	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS
ADMINISTRATIVE	FILE MGMT	FILE MGMT	SYSTEMS

For more information and obtaining all the details of a rewarding career without leaving the office, call or send your resume to the office of your choice.

GENIUS (San Francisco)
3450 16th St.
Room 100
San Francisco, CA 94103
(415) 774-8000
3450 16th St.
Room 100
San Francisco, CA 94103
(415) 774-8000

GENIUS (Chicago)
3450 16th St.
Room 100
Chicago, IL 60607
(312) 330-3300

GENIUS (New York)
3450 16th St.
Room 100
New York, NY 10007
(212) 330-3300



TMC EDP/TEMPS
A Technical Agency Company
3450 16th St.
Room 100
San Francisco, CA 94103
(415) 774-8000
3450 16th St.
Room 100
Chicago, IL 60607
(312) 330-3300
3450 16th St.
Room 100
New York, NY 10007
(212) 330-3300

GENIUS (Dallas)
3450 16th St.
Room 100
Dallas, TX 75201
(214) 774-8000

GENIUS (Houston)
3450 16th St.
Room 100
Houston, TX 77001
(713) 774-8000

GENIUS (Los Angeles)
3450 16th St.
Room 100
Los Angeles, CA 90007
(213) 774-8000

Systems Engineering Manager

Broad-scope role in EDP Financial Systems

An innovative leader in information processing has an excellent opportunity for a multidisciplinary professional with the leadership, marketing and technical talent to provide optimal pre- and post-sales systems support.

A challenging, high-level role. Based in NYC and reporting to the Region Manager, you will get involved in the entire sales support process. This includes pre-sales consultation and technical backup right through installation and customer training. Will supervise systems personnel, keep abreast of technological developments, negotiate software contracts, revenue and profit goals.

A Bachelor's degree in C.S., Business or Math is required. You must have 3-5 years management supervisory experience in a CP environment, preferably with a major bank or financial institution. You must be technically proficient with in-depth knowledge of software installations, keep problem-solving ability and strong communications skills.

A salary in the \$65K range augmented by attractive bonuses and extensive company benefits. To find out more, send resume in strictest confidence, to: Box 481, Deutsch, Shea & Evans, Inc., 48 East 53rd Street, New York, NY 10022. All responses will be forwarded unopened to our client. You may indicate on the envelope those companies to which you do not want your resume sent. Our client is an equal opportunity employer.

DS&E

DEUTSCH, SHEA & EVANS, INC. ADVERTISING

EMPLOYMENT SERVICE FOR PROGRAMMERS AND ANALYSTS

National Openings With Client Companies

Scientific and Commercial Applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering

Call or request resume or rough notes of objectives, salary, location preferences, interest and experience (including computers, models, operating systems and languages) to enter one of our exclusive Client companies pay all of our fees. No phone fee.

RSVP SERVICES, Dept. C
Suite 700, One Cherry Hill Rd.
Cherry Hill, New Jersey 08002
(609) 687-0000

Phone outside New Jersey, call toll-free 800-259-2500

RSVP SERVICES
Employment Agency for Computer Professionals

HP3000 PROGRAMMERS & ANALYSTS

We specialize in the placement of HP3000 analysts and programmers and are currently seeking opportunities across the country for professionals with this experience. Our current positions include:

HP3000 ANALYST	Chicago	TO 3000
HP3000 ANALYST	Chicago	TO 3000
HP3000 ANALYST	Chicago	TO 3000
HP3000 ANALYST	Chicago	TO 3000
HP3000 ANALYST	Chicago	TO 3000
HP3000 ANALYST	Chicago	TO 3000

For additional information regarding these and other opportunities, call Mr. L. M. Martin.

(800) 450-2888 or Personal Resumes to:

Fortune
Personal Consultants
of Virginia Beach
810 South Independence Blvd.
Virginia Beach, VA 23462

PROGRAMMING MANAGER/ SYSTEMS ANALYST

Washington-Federal, a \$75 million management consulting firm, has an opening in its data processing department.

The qualified candidate for the programming manager position must have a minimum of 7 years of extensive programming experience with the HP3000 system. Strong systems analysis background is a desired "plus" factor. The successful candidate will be responsible for managing system analysis, programming, testing and installation of the HP3000 system. The successful candidate will be responsible for managing system analysis, programming, testing and installation of the HP3000 system.

Salary commensurate with experience. Please send resume and salary history to:

WASHINGTON FEDERAL
BAYVIEW & LOAN
5101 Wisconsin Avenue NW
Washington, DC 20018
Attn: Personnel

An Equal Opportunity Employer

Manufacturer's reps for CRT monitors.

Workforce open in Ohio-Kentucky,

northern & southern California

Washington-Oregon, Rocky Mt. States, NY - NYC, New England States

Contact: NSM, P.O. Box 1328, Plano, TX 75074.

NETWORK ANALYST

Our expanding field grade is seeking an experienced network analyst to assist our personnel in the design, installation, and maintenance of network systems and assist with network installations in our Dayton location.

Position requires minimum 8 years in data processing with 5 years experience in data communications, network programming, and network systems. Must have strong interpersonal skills and is motivated to assist and support our users.

Ideal to a leader in the forest products industry and is also a presenter in a variety of settings. High technology field. 2 years as an aggressive and highly motivated individual who is enthusiastic in becoming part of a dynamic organization where results are expected and rewarded, no limitations to your growth and opportunity for advancement. Please send resume to: Director, Corporate Staff Personnel, 3000

Mead

World Headquarters
Courthouse Plaza Northeast
Dayton, Ohio 45402

An Equal Opportunity Employer M/F

SOFTWARE/HARDWARE CONSULTANT

Part-time consultant needed for multi-user on-line business applications. Position requires: Highly able and flexible individual with experience in development of operating systems, hardware and software. Must have strong interpersonal skills and is motivated to assist and support our users.

Contact G. Bradburn or M. Coleman at 817-874-1434.

An Equal Opportunity Employer

PROG ANALYST

Major investment banking concern has opportunity for APL Programmer to join analytical team. 2-4 years experience. Financial background a plus. \$45,000 - \$55,000 P&B

RECRUITMENT SERVICE
300 Fifth Avenue
New York, N.Y. 10001
212-671-1000 (Agency)

HIRING?

More computer people read Computerworld than any other newspaper in the United States - more than half a million computer people every week.

And, among our 529,650 readers at user organizations about half claim to look at recruitment ads at least every other week (only a small percentage say they never look at recruitment ads).

No wonder Computerworld carries more recruitment ads for computer people than any other publication.

To place your ad or to get a rate card with complete details on Computerworld Classifieds, call or write:

Classified Advertising
Computerworld
Box 880
Framingham, MA 01701
617-879-0700

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

APS

Wants the Best

Programmer Analysts & Process Control Engineers

Are you looking for a future with a rapidly growing and exciting company in a state with an abundance of sunshine, recreation and great living? Arizona Public Service and the State of Arizona have it all.

We have a variety of openings for Programmer Analysts in our power plant systems, payroll personnel, corporate models and customer information departments. If you are seeking challenges and have IBM experience in COBOL and PL/I, plus a willingness to learn additional higher level languages such as Basic IV and SAS, you'll be considered for employment at one of the finest and most advanced public service companies in the United States. A background in COBOL with IMS, DL1, OR JCL, TSO-SPF would be helpful. Knowledge of PERT/CPA, PRIMS/PCOM would also be helpful in some departments.

In addition, we are looking for a few Process Control Engineers with proven technical skills in the corporate (IBM mainframe) and process control systems (Honeywell 4000) to provide engineering and software support, maintenance, and enhancement of existing systems. A BS degree in a related field is also desired.

Make your move for the future with a company that cares about their people. Send your resume and salary requirements to David J. Smith, Arizona Public Service Company, P.O. Box 21066, Station 1768, Phoenix, AZ 85068.

Equal Opportunity Employer M/F/H/V



APS
Arizona Public Service Company

Analyst/Programmer IV Opportunities

53,177/month

Juneau & Anchorage, Alaska

The State of Alaska has an immediate need for senior level Analyst/Programmer in person and Anchorage, Alaska. Analyst/Programmer IV performs as either a full proficiency level analyst or technical specialist for positions with programming emphasis. Systems analysis work is done on average application systems or subsystems of large, complex systems. Programmer positions help work in a variety of areas: complex software systems, data base, telecommunications software, system control software, and user applications of high complexity.

Required minimum qualifications are two years of experience as an Analyst/Programmer III with the State of Alaska or the equivalent elsewhere.

NOTE: Analyst/Programmer III characteristically performs a variety of tasks such as detailed program design, coding, testing, debugging, documentation and implementation and/or care of systems specifications and design. This is the full proficiency level for positions with programming emphasis. Systems analysis work is under general supervision.

ANALYST/PROGRAMMER: CMS: COBOL; CICS: VSAM; ADABAS; ADAMANT; NABAL.

If you have the above qualifications, please send your resume to State of Alaska, Dept. CEN, P.O. Box 2554, Juneau, AK 99801. An equal opportunity employer. Women and minorities are encouraged to apply.

State of Alaska

WANTED: SYSTEMS PROGRAMMERS

- 1) Multiple VAX 11/780's with VAX/VMS 3.5
- 2) Multiple IBM 3082's with MVS/SP 1.3

Contact: Mr. Sandy DeGale
808-734-1808



Educational Testing Service
Roseland Road
Princeton, NJ 08541

Equal Opportunity Employer M/F

VICE PRESIDENT FOR SYSTEMS AND DEVELOPMENT

Responsible for all computer work. Heavy involvement in planning and implementation of all computer systems. Responsible for the development and implementation of all computer systems. Heavy involvement in planning and implementation of all computer systems. Heavy involvement in planning and implementation of all computer systems.

CW-50004
Compensationworld
P.O. Box 288
Pittsburgh, PA 15211

EXECUTIVE VICE PRESIDENT

New mid-Atlantic software development/MS consulting firm is seeking a Chief Operating Officer to manage the geographic growth underway. This profitable corporation requires an aggressive executive with a minimum of 10 years related experience, preferably with an IBM, I/O challenge, high earnings potential and a real team player position are attractive. Forward resume and earnings history in confidence to:

SHANE CONSULTANTS
2000 Northpark Drive
New York, NY 10028

PROFESSIONAL ANALYST-40 hours a week, 8:00 A.M. to 5:00 P.M. \$34,000 yearly income. All duties same. Documentation design to all other staff. Documentation design to all other staff. Documentation design to all other staff.

Send resume to Ohio Bureau of Employment Development, 1000 Northpark Drive, Columbus, Ohio 43260, and Order No. 6507107.

An Equal Opportunity Employer M/F/H/V

CONTRACTORS

MS DEVCO PROGRAMMER ANALYST for Houston, Louisiana and Florida.

Conversion Contractors - DOS to OS for Massachusetts, Pennsylvania and Michigan.

Programming Development Services
3000 South Gessner
Suite 100
Houston, Texas 77063
(713) 653-6556

Electronic System Administrator
City of Memphis, TN

Great setting for work and recreation

State-of-the-art computer imaging facility. State-of-the-art computer imaging facility. State-of-the-art computer imaging facility.

Digital VAX 750 environment

Working salary range \$25,720-\$50,000. Working salary range \$25,720-\$50,000. Working salary range \$25,720-\$50,000.

COM-PRO IS SEEKING A FEW OF THE BEST...

We are Com-Pro, a data processing consulting services organization, offering a challenging career with a few dynamic Data Processing professionals. Our Fortune 500 clients demands state-of-the-art talent.

We want SYSTEMS ANALYSTS, PROGRAMMER/ANALYSTS and PROGRAMMERS with excellent backgrounds in MANUFACTURING, BANKING, Insurance, plus a TELEPHONE UTILITY. Candidates should also possess one or more of the following:

- DATACOM/VS/IDEAL
- TANDOS
- IMS DB/DC
- CICS (Command Level)
- DBMS DB/DC
- COBOL
- ADABAS
- PL-1

In addition to excellent compensation, benefits and relocation assistance, we offer professional growth in the outstanding metropolitan areas of Central Florida. Immediate opportunities exist in our Northeastern locations. For consideration, rush your resume including salary history and requirements or ask Personal Director.

Com-Pro

110 S. Weaver Blvd., Suite 111, Tampa, FL 33605
(813) 570-7000

NORTHEAST OPPORTUNITIES

We are seeking a few of the best talent in the Northeast. We are seeking a few of the best talent in the Northeast.

APPLY TO: Mr. J. A. New England, a professional in the Northeast.

THE LINDEN GROUP
100 N. 10th St., Suite 100
New York, NY 10011

MR. J. A. New England
100 N. 10th St., Suite 100
New York, NY 10011

MR. J. A. New England
100 N. 10th St., Suite 100
New York, NY 10011

CLASSIFIED ADVERTISING ORDER FORM

Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy Sell Swap. (Available upon request: Positions Wanted, Software Wanted, Real Estate).

Copy: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines. Any special artwork should be enclosed with your ad also.

Cost: Our rates are \$128.10 per column inch. (A column is 1 1/8" wide.) Minimum size is two column inches (1 1/8" wide by 2" deep) and costs \$256.20 per insertion. Extra space is available in half-inch increments and costs \$64.05. Box numbers are \$15.00 extra.

Billing: If you're a first-time advertiser, (or if you have not established an account with us) WE MUST HAVE YOUR PAYMENT IN ADVANCE. A purchase order number is also acceptable.

Ad size desired: _____ column wide by _____ inches deep.

Issue Date(s): _____

Section: _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Signature: _____

Send this form to:
COMPUTERWORLD CLASSIFIED ADVERTISING
875 Connecticut Road
Box 650
Pittsburgh, PA 15201

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

POSITION ANNOUNCEMENTS

Data Processing Professionals

CLIMB TECHNICAL MOUNTAINS...
...INSTEAD OF POLITICAL LADDERS

It's jungle out there. Office politicians, rumormongers, game players... all out to get to that next job title, the next rung on the hierarchical ladder. Some people think that's what constitutes a "career." In others, technical challenges, the chance to learn new facts, developing and expanding their skills and variety are more important. If that's you, you've found your company: Cutter-Williams.

Cutter-Williams is one of the nation's oldest, most complete data processing services company. Our clients cover virtually every segment of industry, business and government, all across the country. As a Cutter-Williams consultant, you can expect a constant variety of challenges, exposure to new technologies, projects in different fields, ever-changing responsibilities. Your job title may not change, but your abilities, knowledge and marketability in the DP world will.

Opportunities are available at our offices in Dallas, Cleveland, Chicago, Detroit, Houston, Los Angeles and Tulsa for individuals experienced in the following:

- COBOL/PL1
- SYSTEM 38
- IBM C/DC
- VAX/11/70
- DMS
- MARK IV
- COBOL or PL/I

Just because you won't be advancing along a traditional "career ladder" doesn't mean you won't be growing—you'll be growing in both skill level and salary level.

And our benefits are comprehensive. If you're ready to climb a range of technical mountains, call toll free 1-800-527-4887, or send your resume to Richard W. Stark, Cutter-Williams Inc., 3655 Villa Creek Drive, Suite 305, Dallas, TX 75234.



CUTLER-WILLIAMS, INC.

Equal Opportunity Employer m/f/h

Job Opening: Business Programmer/Analyst
We are seeking a highly motivated individual with strong analytical and programming skills to join our team. The successful candidate will be responsible for analyzing business requirements, designing and developing computer programs, and testing and maintaining existing systems. The position offers a competitive salary and benefits package. Interested candidates should submit their resume and references to: **ROBERT MARSH OF PROVIDENCE, INC.**, 200 West Third Street, Providence, RI 02901. Phone: (401) 274-0700. Personal Confidential.

ADABAS
ANALYST

High-level software development. Strong relational data base skills. Proficient in COBOL, ADABAS knowl. & fourth generation language (Natural) development. Proven client & data base analysis response. \$40,000.

ROBERT MARSH OF
PROVIDENCE, INC.

200 West Third Street
Providence, RI 02901
(401) 274-0700
Personal Confidential

PROGRAMMER/PROGRAMMER ANALYSTS

JOHN

PRATT & WHITNEY
IN FLORIDA

PRATT & WHITNEY is seeking individuals with a Degree in Computer Science or related area and 2-5 years experience with COBOL, IBM, JCL, MVS, TSQ, SPT, IMS DB/DC, VSAM on large IBM main frames in the following areas:

- BUSINESS APPLICATIONS
- ENGINEERING-PARTS SYSTEMS
- SYSTEMS PROGRAMMING (MVS, VM/CMS)

The opportunities we offer combined with our excellent South Florida climate and superb recreational facilities are unbeatable — our employees love it here — so will you.

Please send your resume to Professional Placement, Department CW, Box 2691, West Palm Beach, FL 33402.

UNITED TECHNOLOGIES
PRATT & WHITNEY

An Equal Opportunity Employer, M/F

New England, Westchester
& NY Metropolitan Area

Permanent and/or

Independent Consulting

SPT, BASIC, FORTRAN, PASCAL

SAS, COBOL, IBM C/DC, MACRO &

COMMAND, BASIC, MICRO, NON-

EYEWELL, COBOL, LISP, PASCAL

with, Level 5, DMS, TP, MCLTE,

RSL, IBM-PC, LOTUS 1-2-3, Green X

Overseas at all levels in any of the

above. Call Maggie Lema, 512-207-

089 or submit resume to: Horsham

Inc., 17 West 54 St, NY, NY 10019.

SYSTEMS

P.P.A. is currently seeking D.P. Professionals for its growing Southwestern Division. Our immediate needs include:

• SAS

• FORTRAN

• COBOL

• BASIC

• DMS

• IBM-PC

Even if you do not have one or more skills, but have a strong D.P. background please call or send resume to: Shirley Black.

PROFESSIONAL PERSONNEL

ASSOCIATES, INC.

4400 Santa Fe Blvd, Suite 504

Denver, CO 80212

(303) 442-8000

Employer Paid Post - Affiliated Employer

IMS

Programmer, Programmer/Analyst, Systems Analysts needed for immediate opportunities in the Bureau. Let David of Albuquerque provide the professional guidance for your next career move. Call Deane Gear at (800) 262-1871 or send a resume to:

CVT Limited Inc. Suite 210

Albuquerque, NM 87110

All Fees Paid By Client Company

BUY - SELL - SWAP

IBM UNIT RECORD EQUIPMENT



SALE OR LEASE

IBM UNIT RECORD MACHINES

025-025-082-083-084
085-087-088-125-514
515-048-557

NEW & USED

DISK PACKS-DATA MODULES
2315-6236(1)-3336(1)-3348(70)
MAG. TAPE-DISKETTE
Every Item Overhauled

Highest Prices Paid for Used Packs & Modules

THOMAS COMPUTER CORPORATION

P.O. Box 1000

P.O. Box 1000

P.O. Box 1000

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

IBM System/36

All models — quick delivery
Special Option+Plus+Lease™ Plan

IBM PC's AT's & XT's

Rental • Lease • Purchase
Excellent Availability — Substantial Savings

System/34 • System/38

TOP SAVINGS • QUICK DELIVERY • SHORT AND LONG TERM LEASES
MEMORY • FEATURES • UPGRADES

SERIES/1

SAVE UP TO 60%

CPU's • PERIPHERALS • ALL MODELS

CALL
TOLL
FREE

800/328-5718

IN MINNESOTA 612/544-8860

COMPUTER OPTIONS, INC.

1860 SOUTH HIGHWAY 100 • MINNEAPOLIS, MN 55416

COT "Your best option"

CDA

SERIES 1

NEW, USED, FEATURES, & CDC PERIPHERALS.
HARD TO FIND NEW PRODUCTS IN STOCK.

34, 36, 38.

50% UNDER IBM LIST.
72 HOUR UPGRADES, 808 FEATURES.

4331/4341

TAPE, DISK, PRINTERS,
FLEXIBLE LEASE ALTERNATIVES.

5100, 5120, S/23.

DISPLAY WRITERS IN STOCK NOW.

800/328-3884

IN MINNESOTA, CALL 612/588-3042

We do an exceptional
job — our clients do
repeat business.

Exceptional!

XEROX COMPUTER SALES
1614 Harmon Place
Minneapolis, MN 55403

X

Looking for a few good MIPS?



Make a
MAJOR move.

- sublease an Amdahl 5860
- 18-60 month terms
- 100% IBM compatible
- upgrade from IBM 3033
- upgrade from Amdahl 470/8
- great price/performance alternative
- available now



10237 Yellow Circle Drive, Minnetonka, MN 55343

Call (612) 933-6000

Ask for Charlie Berry, Tom Starn, Doug Abelson.

MARION

BUY • SELL • MAINTAIN

IBM SYSTEM/34/36

- PROMPT DELIVERY
- ALL SYSTEMS 24 HRS FULLY RECONFIGURED
- ALL SYSTEMS 34/36 CONVERSIONS TO YOUR NEEDS
- PERIPHERALS — NEW AND USED
- UPGRADES AND FEATURES DELIVERED AND INSTALLED
- LONG TERM LEASES AT COMPETITIVE PRICES
- SHORT TERM RENTALS
- TRADING-IN ACCEPTED
- GUARANTEED WORK OR IBM MAINTENANCE



A PHONE CALL CAN SOLVE ALL YOUR EQUIPMENT PROBLEMS

TALK TO US...
NEW JERSEY (201) 343-0864
CONNECTICUT (203) 726-3400
PITTSBURGH (412) 884-0812

FOR SALE BY OWNER DEC PDP 11/70

- 1.5MB MOS memory
 - Two PAK33 67MB disks
 - TE16 800/1600 tape
 - Floating point processor
 - Three D111 16 ch. mut's
 - RSTS/E license
 - BASIC-1.2 license
 - Additional modules
 - operational, available for testing and immediate delivery
 - full DEC maintenance
- contact: Brian Feltner
(519) 678-6378
The University of Western Ontario
London, Ontario
M5A 5C2

IBM 4341-M2

8 Meg
Features
M02
9063
9003
IBM 3278
Features
A02

Eligible for IBM Maintenance
Available 11/15/84
Contact:

FBC, INC.

87 Grandview Avenue
Waterbury, CT 06708
(203) 675-1022

Buy • Sell • Lease

S/34 S/36 S/38

IBM

3741 3742

UPGRADES
CPU'S, CRT'S, PRINTERS
ALL MODELS
PURCHASE/LEASE/RENT
SHORT & LONG TERM LEASES

Computer Marketing
of America, Inc.
P.O. Box 71
438 Bryon Street
Old Hickory, Tennessee 37138



1-800-251-2670

In Tennessee: 615-447-4031

BUY SELL SHAP

BUY SELL SHAP

BUY SELL SHAP

BUY SELL SHAP

BUY SELL SHAP

Get a clear picture on all your leasing needs.

With all the high-tech equipment available, making a decision about what's right for your company isn't always easy.

That's why Greyhound Capital Corporation works with you to make those decisions. Whether you want to lease or purchase, we'll work with you to customize your equipment requirements. And we'll also work with you to customize a financing schedule that meets your financial requirements.

We've been leasing, servicing, refurbishing, maintaining and providing financing for computer and other equipment for over 20 years.

So if you have questions regarding your equipment-leasing system, call Greyhound Capital Corporation. We'll make the picture perfectly clear.

Regional Offices

Mike Timmery	Eastern Regional Headquarters	(617) 272-8110
Dave Hyland	Western Regional Headquarters	(415) 283-8980
John O'Shea	Central Regional Headquarters	(312) 789-9100
Don Gail	Southern Regional Headquarters	(512) 451-0121

Sales Offices in:

Atlanta, Austin, Boston, Chicago, Dallas, Houston, Los Angeles, New York, Philadelphia, Phoenix, Pittsburgh, San Francisco.

Canada Group

Gordon Clarke	Canadian Headquarters	(416) 344-1575
----------------------	-----------------------	----------------

Greyhound Capital Overseas Corporation

Don Harworth	International Headquarters	(214) 233-1018
---------------------	----------------------------	----------------

Offices in London, Paris, Geneva, Munich

GREYHOUND CAPITAL CORPORATION

A subsidiary of The Greyhound Corporation



BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

Announcing SUPERLEASE

on
IBM 4245
IBM 4248
IBM 3725

Call for more information



Available **NOW**

3278
3180
3179
3274
3725

We Understand Computations



WE BUY • SELL • LEASE

JOIN THE MANY FORTUNE 500 COMPANIES THAT UTILIZE IBM EQUIPMENT FROM THOMAS. THE IBM SPECIALISTS

1331 1311 • 1361 1381

We buy, sell or lease - 2, 3, 4 year leases

WE BUY IBM PERIPHERALS

3803 3375 3880 3350 3203 3811
3420 3380 3340 3370 3211 3282

IBMS 31 36 38

All upgrades available now - 1, 2, 3 year leases

We'll take 5/34 trade-ins

WE BUY ALL IBM PRINTERS AND TERMINALS

PLUS 3804 REPAIRS NOW

SERIES 1

All features and peripherals • Convenient lease
We buy, sell or trade

WE WANT TO BUY

IBM PC's - IBM XT's AND
IBM DISPLAYWRITERS

TexCom

CALL TOLL FREE: 1-800-425-7119 (PURCHASE)

SAN ANTONIO (957) 345-0885 (LEASING)

MEMPHIS (901) 705-7008 (LEASING)



Control Data

126488 Removable Drive .. \$12,900

Diskette Drive \$ 1,495

Printers & Displays

SERIES I SPECIAL

New or
Used

Immediate Delivery

IBM

4954 Processors

4967 200MB Disk Drives

All Peripherals & Features

ALL
UPGRADES

TERMINALS

TAPE

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

4900
3035 BOOK

SYSTEM
34/36

The nationwide market - a call away!

DEC/DG

SYSTEMS/PARTS/PERIPHERALS
NEW/USED/SURPLUS • DISCOUNT PRICES

Since 1977! Buy, Sell, Trade and Broker.

PHIL

BRYAN

JENNIFER

DG

11-VAX

8-LSI

CALL TODAY - (305) 392-2005

TELEX 568-670

thomas business systems, inc.

4301 Oak Circle • Unit 11 Boca Raton, Florida 33441

IBM

SERIES/1

SYSTEM 34 SYSTEM 36 SYSTEM 38

4300 • \$110-\$120 • 5/32

BUY • SELL • LEASE

All models, systems

and peripherals

AVAILABLE NOW!

Just about our

22 hour upgrade.

(408) 425-7333

TELEX 568-670



Bob Loney

President & Founder

SOURCE
DATA PROCESSING, INC.

3375's

AT, 81, 81, 81

Available 12/1/84

Instant

4341's

Large Term 1-2 Yrs.

4381's

Instant

Problems

3800 3811 4300

3800 3811 4300

Instant

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

3375's

Inflation Fighters

Quality & Savings

Highly rated. Money Back Guarantee.

Full Range. All Essential Levels. Personal

Call for rates of 800 SPK through

200 SPK

2400 Floor \$4.95 ea.

1200 Floor \$4.25 ea.

600 Floor \$3.50 ea.

All Tapes with Hinging Seals

We may brighten up others over 200 items.

All orders shipped within 48 hours.

Call or Write

Computer Tape Mart

434 Sandbar Avenue

N. Amityville, New York 11701

(516) 562-8512



Estimated 1984

Computer Marketing Inc.

P.O. BOX 0

MARGATE, NJ 08402-2223

800-823-6000 • 800-345-0005

Circle 2/Barrie Good



BUY SELL SWAP

BUY SELL SWAP

SUPER DIGITAL SALE

WE MUST LIQUIDATE \$2,000,000 WORTH OF DEC* INVENTORY TO MAKE ROOM FOR NEW SHIPMENTS

COMPUTERS

	LIST	SALE
VAX/11/10	\$55,000	\$40,000
VAX/11/10-2	\$4,000	\$3,000
VAX/11/10-3	\$1,000	\$800
VAX/11/10-4		

DISK DRIVES

	LIST	SALE
RMK/AA	UNED	\$2,000
RMK/AA	UNED	\$2,000
RMK/AA	UNED	\$2,000
RMK/AA	UNED	\$2,000
RMK/AA	UNED	\$2,000
RMK/AA	UNED	\$2,000

TAPE DRIVES

	LIST	SALE
TR/11/10	UNED	\$12,000
TR/11/10	UNED	\$2,000
TR/11/10	UNED	\$2,000
TR/11/10	UNED	\$2,000
TR/11/10	UNED	\$2,000
TR/11/10	UNED	\$2,000

MEMORY

	LIST	SALE
MEM/11/10	\$4,000	\$2,000
MEM/11/10	\$4,000	\$2,000
MEM/11/10	\$4,000	\$2,000
MEM/11/10	\$4,000	\$2,000
MEM/11/10	\$4,000	\$2,000
MEM/11/10	\$4,000	\$2,000

SPECIAL OFFERS

Pulse Engineering
Controller

Get Maximum Data Collection complete with
Micrologger, Controller and real time 10.1

For All POP-11 Systems \$14,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

For All 11/10 VAX Bus \$10,995

BUY SELL SWAP

SYSTEMS

4341 4331
38 36 34
32 3

BUY - SELL - LEASE

COMPUTER
BROKERS, INC.
2875 SHELBY ST.
MEMPHIS, TENNESSEE

CB

SERIES 1

Call

TOLL-FREE

800-336-8405

901-372-3822

PERIPHERALS

3203 3370

327X 3411

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

3350 3420

BUY SELL SWAP

BUY SELL SWAP

PICK A CARD . . .
ANY CARD

and call
800
828-4227

(910) 240-1000 VLS, Inc.

We're ready
to deal.

MEMORIES

PERIPHERALS

CARLYN

COMPUTER SYSTEMS

5105Q BACKLICK ROAD, ANNANDALE, VA 22003

HAVE IT YOUR WAY!!

— We will configure any system the way YOU want it.

— When you request — we will buy your old system or you can keep

what you have and upgrade using our stock of peripherals,

CPUs, tapes, disks and controllers.

OUTSIDE CALIFORNIA **800-854-0350**

SOUTHERN CA 714-855-8888 NORTHERN CA 408-730-8888

213-740-3000 CENTRAL CA 308-255-2205

DATABASE CORPORATION HEADQUARTERS

1081 300 MELBOURNE PLACENTIA, CALIF 92670

*Technician of Digital Equipment Corporation

*Offer subject to prior sale

WASD EQUIPMENT
NOT DEAL

OF THE WEEK:

2200 MATRIX

PRINTER SPECIAL

2200s 2221W in stock now for

immediate shipment.

BRAND-NEW: \$1,200

BRAND-REFURB: \$850

* FREE ESTIMATES

* FREE WARRANTY

* 5 DAY RETURN PRICES

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

* 24 HOUR SERVICE

MEMORY

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP



Will the real lessor please stand up!



Who do you want to deal with during your computer lease?

An investor?

Ан имиграциясы саклануу?

A consortium of banks?

Or your leasing company!

As computer experts, we understand your individual equipment requirements. Hartford Computer Group doesn't sell your leased equipment to an investor who will not understand or care about your requirements.

When you sign a lease with Hartford Computer Group, you deal only with us. We maintain complete ownership and control of your leased equipment and can therefore give you the *flexibility* you want in a computer lease. We can do this only by refusing to participate in tax-advantaged leasebacks that give investors control over your leased equipment. Tax-advantaged leases allow for little or no flexibility!

We give you Hartford Computer Group. Want to lease computer equipment? Want to upgrade your computer equipment, renew your lease, or change your leased system completely? With no outside investors or participants to inhibit your transaction, Hartford Computer Group is free to offer the ultimate flexibility in customer service.

You deal with one company, before and after the lease begins, the real lessor... Hartford Computer Group!

Your questions about our unique computer leasing program are answered in our brochure. Write or call for your copy.

308x/3033?

A/C Units -
M/G - Chillers
NEW or USED IN STOCK
BUY • SELL • LEASE
DICK LEONARD
612-944-8552

**Hartford Computer Group 800 323 6355**

A Subsidiary of Hartford Financial Corporation
515 East Golf Road, Arlington Heights, IL 60005

cat 312 364 0505

RENT • BUY • UPGRADE • SELL

PDP, 11/03, 11/04, 11/23, 11/24, 11/34,
1/44, 11/79, VAX/730, VAX/780, VAX/780

SYSTEMS • OPTIONS • SUPPLIES

WAX 780	2495, 3-PMER's, TE 18, 800-PM Power, Share/eng-term Rental	
WAX 780	1490, PLAND-CA, TUBE, DMFSL LA 100, VMS (NEW)	\$77.80
11970	612038 MACH. PMPMPS, TW 18, 0211E (JUNE)	\$64.80
11983	258458, DUAL PL002's, DZV11-C, 0211E, License (NEW)	\$14.90
11984	1490, PLAND, TUBE, DZV1-DP (NEW)	\$88.50
11984	258458, DUAL PL002's, DZV1-C, 0211E, License	\$14.90

Customized Configurations—Call With Your Regiment.

In Stock	Species	In Stock
1U24-BC	DZ11-AP	LP11-VI
1U24A-YE	HS790-CA	MS11-PB
KA11-KU	HS790-PB	MSV11-LA
CMF32-JP	SL50-GE	PH790
DAM11-AJ	SP90-AA	PK11-EA
DZ11-F	SP90-CA	PH903-AA
DZ32-AP	TH900-CA	RLIAD-AA
PP11-A	VT190-AA	TS11-CA
PP11-F		TL77-AF

CALL NOW FOR FREE CATALOG

THE A-100 program is supported by Digital Equipment Corp.

IBM

SYSTEM/34

S/3 • S/32 • S/38

5291 • 5251

3741 • 3742

BUY • SELL • LEASE
REFURBISHED • RECONFIGURED
SHORT-TERM LEASES
PURCHASE/LEASEBACK

Tennecom
MARKETING INCORPORATED
210 SPACE PARK NORTH
P.O. BOX 240
GOODLETTSVILLE (NASHVILLE)
TENNESSEE 37072

800-422-1004
IN TENNESSEE CALL (615) 858-3072

**We're dealing
the DEC*
in your favor**

desco holds an ace—the complete line of new and pre-owned DEC® central processors and peripheral hardware. We're in business to buy, sell, and lease DEC and other high-quality computer equipment.

desco is a subsidiary of data3, a trusted supplier in the secondary computer market for over 12 years. Count on us for the same reliable service.

Call Neil Spaulding today for more information and straight deal.

TEC is a registered trademark of Digital Equipment Corp.
 11000 Providence Drive, Suite 615, Eden Prairie, MN 55324
 Local: (612) 944-8434 MN WATS (800) 247-2222
 National WATS (800) 328-0004 TWX (910) 526-2828
 (except Alaska and Hawaii)

desco



BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

When You Think Of Leasing Anything, Think Of Comdisco

For Sale Or Lease

3063/3061 3178/3180/3278

4331/4341 3800-1/-3

3380/3880
Inquire About Our Lower Than VPA Lease Rates Without Quantity Commitments3370/3378
FBI In Short Strings on Short Terms3420-4/-8/-8 3803-2
If You Cannot Wait For 3480 - Do A Short Term 3420 Lease

3725 Quick Delivery

4248/4248 Quick Delivery

Wanted To Buy

3063/3061 3350/3830

3287 3803-2

COMDISCO

Eastern Region
Connecticut 203/885-1271
Cortland, NJ 201/888-5685
Washington, DC 301/441-1989
Philadelphia, PA 215/542-3025
Boston, MA 617/542-5685
Red Bank, NJ 201/942-8111

Midwestern Region
Chicago 312/855-3688
Michigan 313/644-1588

South Central Region
Dallas 214/851-3295
Houston, TX 713/462-1815
Atlanta, GA 404/288-8988
Florida 305/428-3177
Charlotte, NC 704/236-0884

Western Region
San Francisco 415/666-1111
Los Angeles 213/458-7757

*Regional Headquarters
*Corporate Headquarters



TELEX 750927
encore
(213) 452-8117

IBM
5118 \$150
3741 \$762
DATAMASTER

1255 MICA
SYSTEMS
34.36.36 32.22
All Machines Fully Loaded

BUY SELL LEASE

• Personal Computer Systems
• Upgrade & Expand Your System
• Rental Plans
• IBM Maintenance Contracts
Call Today! Not Good Any More!
(615) 255-6565

SCOTTSDEN
DATA SYSTEMS
Nashville, Tennessee

BUY-SELL-LEASE
SERIES-1
34 • 36 • 38 • 23

3705
4300 3706
3725

Upgrades
Tapes • Printers • Teles • Disks

AMCOM

1000 W. FINE ST. - JENSEN, ILL. 61840

CALL TOLL FREE
800-328-7723

IBM 4381PO2

AVAILABLE FOR MONTH TO MONTH RENT
OR FIXED TERM LEASE

MONTHLY RENTAL \$35,000

Save as much as \$8,500 per month vs. IBM MPC

12 MONTH LEASE \$30,000

24 MONTH LEASE \$21,800

36 MONTH LEASE \$16,800

CALL JOE MICHAELS AT: 800-NAT-COEC

OR YOUR LOCAL

NATIONAL
Computer Equipment Corporation
(313) 774-7400

***** DEC *****

BUY-SELL-LEASE-TRADE-CONSIGN
SYSTEMS - PROCESSORS - OPTIONS
PERIPHERAL - MODULES - MEMORY
- SPARES -

NATIONAL COMPUTER EXCHANGE

(800) 624-9299

600 North Lunar Avenue, Brea, CA 92621

(714) 990-5988

(404) 853-8963 S/C CENTUM (404) 856-6271

1901 Powers Ferry Road, Suite 110, Marietta, Georgia 30067

SERIES 1 DPD S/34•36•38 CADD

BUY-SELL-LEASE

CALL 800-241-5264 Y'ALL

GENERAL AUTOMATION

For Sale by Owner

386 440 440 CPUs

AT/CONVOLUTION CONVERTERS

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

IBM 4381PO2

FREE
DEC and
DATA GENERAL
Bioscience Guide

Call or write for complete details

NEWMAN

313/994-3200

IBM

3270

SERIES 1

BUY, SELL, LEASE

Computer Brokers Inc.

Call Richard Crenshaw

Toll Free

800-238-6405

Also 901-372-2822

DON'T MISS THIS TERMINAL SALE

SCHERERS

LET'S GET ACQUAINTED
TERMINAL SALE

DEC TERMINALS

PRICES SO LOW
WE DARE NOT PRINT THEM!!!IF YOU SNOOZE —
YOU LOSE!!!

Immediate Full 90 Day
Delivery Warranty In Stock

(614) 889-0810

Prices subject to change without notice

DON'T MISS THIS TERMINAL SALE

DATA GENERAL

Hanson Data Systems

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

BUY SELL SWAP

THE SYSTEM/38 AND CRISP



RUN RINGS AROUND THE COMPETITORS CRISP

Designed on the System/38 for the System/38, is the one turn-key CUSTOMIZED, FULLY INTEGRATED, ON-LINK, DATABASE, SOFTWARE PACKAGE that utilizes every feature of the System/38. • Sales Order Entry • MRP II • Cost and Financial Accounting • Loading and Dispatching • Inventory Status and Forecasting • Purchasing and Accounts Payable • ...and much, much more.

For additional information on how the System/38 and CRISP can help you, call or write today.

FRIEDMAN & ASSOCIATES, INC.

100 HICKORY HOLLOW, GAITHERSBURG, MARYLAND 20878
(301) 860-7100

SOFTWARE CONVERSION SOLUTIONS

Discover how the software business solves your most serious conversion problems. Over 15 years of conversion experience has resulted in thousands of satisfied customers worldwide.

- COBOL to COBOL
- AUTOCONVERT / SPS to COBOL
- AUTOCONVERT / VSIM to COBOL
- SAS / ALG to COBOL
- SAS / ALG to DB / ALG
- PL/I to COBOL
- SPS / SPS II to COBOL
- SPS / SPS II to PL/I

Discover other services & software to meet your needs. For more information, call or write today.

**The Computer Software People
DECAWARE, INC.**

2544 Broward Avenue
Burlington, New York 10717
Phone (716) 574-5738
TELEX 91519

Award-Winning



Featuring:

- ★ Date-Invariant Processing
- ★ Large Scale Integration
- ★ User-Defined Vocabulary
- ★ Paperless Processing

General Accounting	Payroll/Personal
Accounts Payable	Book to Tax Accounting
Accounts Receivable	Order Processing
Equipment & Fixed Assets	Inventory Management
Financial Reporting	Sales Analysis
Planning & Budgeting	Oil & Gas
Job Cost Accounting	Spread Sheet Processor

J.D. Edwards & Company

4000 E. Symmes / Suite 5000
Denver, CO 80227
303 773 3738
Dallas — 214 488-0838
Houston — 713 860 8778
San Francisco — 415 571 5750
Newport Beach — 714 955 0118
Beverly Hills, CA — 805 327 1011
Tulsa — 918 483 1477

IBM

SELLING SOFTWARE?

Sell It Here.

Call Computerworld

To Place Your Ad.

1-800-343-6474

Mini-Computer Software Development/ Language Conversion

Indian firm of data processing professionals specializing in mini-computer software interested in turn-key contracts with US software firms. We undertake language conversion as well as development of software modules for specific customer applications. Write Box CN-84082, Computerworld, Box 880, Framingham, MA 01701

TIME & SERVICES

IOOTECH Innovative Computer Techniques

COMPUTER SERVICES
IBM 3081 DEC-10

Assembly Job Entry • Control Processing
Batch Processing • Time-sharing
Control Unit Feeding • Laser Plotting
COMPUTER OUTPUT MICROFILM
Photographic Mini Auto-Color
Computer Output Processor
2000 LPI Capability
Price Varies

Route 200
Barton, NJ 08809
907-454-1158
Contact: Joyce Taggart

VAX TIME

CHOOSE THE PLAN BEST FOR YOU
A & B 84 CPU RISC & B CONNECT HR.
B \$ 212 PER CONNECT HOUR
C & D 600/800/100 & 10 MB DRAM
NO CPU CHARGES ON PLANS B & C
PROGRAMMING SERVICES AVAILABLE

AVAILABLE & NETWORKING
VIA TELENET
TELENET
(714) 964-1111
(714) 964-6041

DATACENTER SERVICES

NO 2 3 3

BURNS

MEMORY REPAIRS

ANY MANUFACTURER
DEC - DG - AMPEX - NABES - PE
CA - MICRODATA - CDC - IBM
MOTOROLA - PERC - NATIONAL
PILBET - SAMSUNG - SA
OR ANY OTHER
• LOW CONTACT RATES AVAILABLE
• 1 YEAR WARRANTY
• 10 DAY WARRANTY
• CODE BRICK REPAIR

POWER SUPPLY REPAIRS

ANY MANUFACTURER
OVER 120 YEARS OF EXPERIENCE
SERIAL CABLE SERVICE

DD5

VAX 11/780 AND PDP-11 DEVELOPMENT TIME

NO KEYCODE TOLL CHARGES / NO CPU CHARGES

Omnicomputer

\$7/\$14

RTS/E VMS

PER HOUR
CONNECT TIME

- OMNICOMPUTER'S SERVICES
- PROGRAMMING
 - CUSTOMER SOFTWARE SERVICES
 - MAINTENANCE SERVICES
 - BACKUP SERVICES
 - SOFTWARE DESIGN
 - BUY/SELL/LEASE SERVICES
 - EXECUTIVE SEARCH
 - SITE SURVEYS
 - REG. CONSULTING
 - NETWORK SERVICES
 - USER PROMOTION SERVICES

Omnicomputer, Inc.
1436 Broadway, New York, N.Y. 10018

- LANDMARKS & PROGRAMS AVAILABLE
- BASIC PLUS
 - BASIC PLUS II
 - PASCAL
 - COBOL
 - FORTRAN
 - PL/I
 - PERC
 - REX
 - REX EXECUTIVE
 - REX II
 - REX III
 - REX IV
 - REX V
 - REX VI
 - REX VII
 - REX VIII
 - REX IX
 - REX X
 - REX XI
 - REX XII
 - REX XIII
 - REX XIV
 - REX XV
 - REX XVI
 - REX XVII
 - REX XVIII
 - REX XIX
 - REX XX
 - REX XXI
 - REX XXII
 - REX XXIII
 - REX XXIV
 - REX XXV
 - REX XXVI
 - REX XXVII
 - REX XXVIII
 - REX XXIX
 - REX XXX

**BUDGET
BYTES®**
212-
944-9230

THIS SPACE FOR HIRE.

(Inquire at
Classified
Advertising
Department)

COMPUTER TIME RENTAL

IBM 4381
DOLBY - 1000
AS 1000 Available
2570 Disk, 3430 Tape
Dual/Denali
1400-111
2545 Random/1000
Reasonable Rates
Contact: Al Polino
Reconnet Data Services
(212) 967-1411

COMMERCIAL DATA PROCESSING

4001-2 370/150-2
OS-DOE-VIACOS
CICS-ROSCOE
REMOTE JOB ENTRY
CICS DEVELOPMENT
CUSTOMER SOFTWARE
XEROX LASER PRINTING
Contact: Gary Davis
(917) 777-3464
15 MINUTES FROM LINCOLN TUNNEL
WOOD BRIDGE, N.J. 07093

COMPUTER TIME

3033-U

4341-2

TSO/CMS

CICS/IMS

Call Pat Holmes
(201) 930-9561
(212) 921-8855

COMPUTER TIME & TIMESHARING

- We are time brokers.
- RENT timesharing on our specialty.
- NEVER a charge to the Buyer.
- Our fees paid by the Seller.

Call Don Selden at
Computer Resources, Inc.
(301) 886-6100

**CLASSIFIED ADVERTISING
ORDER FORM**

**Computerworld's
Classifieds work.**

Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Business Opportunities and Real Estate).

Caption: We'll typeset your ad at no extra charge. Please attach **CLEAN** typewritten copy. Figure about 25 words to a column inch, not including headlines.

Cost: Our rates are \$128.10 per column inch. (A column is 2" wide.) Minimum size is two column inches (2" wide by 3" deep) and costs \$256.20 per insertion. Extra space is available in half-inch increments and costs \$64.05. Box numbers are \$15.00 extra.

Billing: If you're first-time advertiser, (or if you have not established an account with us.) WE MUST HAVE YOUR PAYMENT IN ADVANCE.

Ad size desired: _____ columns wide by _____ inches deep

Income Distribution _____

Section _____

Signature _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Cancel this form too.

COMPUTERWORLD
CLASSIFIED ADVERTISING

375 Cochituate Road, Box 880,
Framingham, MA 01701

Foreign Editorial/ Sales Offices

England: Martin Durham, CW Communications Ltd., 99 Grays Inn Rd., London WC1 8UT. (Phone: 01-831.9252; Telex: 262348).

Even Ross, Bill Dunlop, Stephen Thomas, Beers Holborn Assoc., 345 Gower St., Islington, London EC1V 9HL. Phone: 01278 3415/6

W. Gersmeyer, Edinburgh, UK, CW Publications

France: Axel Leblais, Le Monde Informatique

185 Avenue Charles De Gaulle, 92200 Neuilly
Sur Seine, Paris. Phone: 758.14.14. Telex:
613234 F.

Japan: Mr. Shuji Matsuguchi, Computerwork
Japan, 7-4 Shintomi 1-Chome, Chuo-ku, Tokyo
104. Phone: (03) 551-3852, Telex: 252-4217

H. Kajiya, Tokyo Representative Group,
Sanshin Kogyo Bldg. 3F, 2-10 Kanda Jinbo-cho

Chiyoda-ku, Tokyo 101. Phone: (03) 230-4117/
B. Telex: J28880 (page for all CWCJ publications
except Computerworld Japan).

Australia: Alan Power, Computeworld Pty Ltd., 37-43 Alexander Street, Crown West, NSW 2065. Phone: (02) 4366133. Telex: AA74752

Spain: Neil Kelley, Computeworld/España, Barquillo 21, Madrid 4. Phone: 231-23-85; 231-23-86; 231-23-88. Telex: 47804COW E.

Denmark: Preben Engel, Computerworld/
Denmark, Gamstel Strand 50, 1202 Copenha-
gen N. Phone: 01-1234-11. Telex: 27366

Source: **Bong Marnicht**, Nova Media, Nova

Media AB, Vertavägen 55, 11538 Stockholm.
Phone: 08-234280. Telex: 6105088 NORDCW.

The Netherlands: Johannes A. Witvoet, Mgr.
Dir., Computerworld Benelux, Van Engelenstraat
84, 1071 GK Amsterdam, Phone: 020-646426.

Italy: Daniele Corbelli, Gruppo Editoriale Jackson, S.r.l., Via Rosellini 12, 20124 Milano.

Argentina: Ruben Argento, Gen. Mgr., Computeworld Argentina, Av. Belgrano 405-Piso 9, 08, 1000 Buenos Aires, Phone: 34 6092 0550.

Norway: Mr. Per Børseth, Editor, OW Norge

A/S, Hovlinveien 43, P.O. Box 2852, Tøyen,
Oslo 6. Phone: 2/847720. Telex: (950) 76476

Manager, Asia Computerworld, Pte. Ltd., 11-08,
11-10 Goldhill Plaza, Newton Road, Singapore.
Phone: 250-4444. Telex: (786) RS 37003

ADVERTISERS INDEX

[illegible]

WHEN IT COMES TO LINKING PC'S TO MAINFRAMES, ONE COMPANY IS A MILLENNIUM AHEAD.



You don't have to look hard to see why McCormack & Dodge has linked more PC's to more mainframes than any other business software vendor.

It's a classic case of a superior product leading to superior sales.

To begin with, our link does more than just link. It works like you do. Selectively. Analytically. And in real time—so that company decision-makers always have the freshest, latest data available. Current and accurate up to the second you display it on your PC screen.

If you've tried out other PC links, you'll notice the M&D difference the moment you start downloading information from the mainframe to your desk. For example, you'll see that you can access all applications, no matter who designed them—not just those designed by McCormack & Dodge. And you'll discover the ease of working with a system that lets you pinpoint and selectively summon exactly the portion of data you need.

Once you've called the data down to your PC, the Lotus 1-2-3 software in our link lets you crunch numbers backwards, forwards, up and down—anywhere your mind wants to take them. You can instantly construct detailed spreadsheets. You create brilliant color graphs.

And the moment you finish massaging the data to your liking, our link lets you shoot it back to the mainframe (assuming you have the proper security clearance). You do it yourself on the spot—in real time. Without keyboard operators or programmers. So the entire company has the benefit of the latest information immediately. Not days later.

The M&D PC link is one of several products in our highly acclaimed Millennium family of borderless business software. When you compare the entire Millennium concept to anything else claiming "total integration," you'll see that M&D isn't just out-linking the competition. We're out-thinking them.

WHEN YOU THINK ABOUT TOMORROW, MILLENNIUM MAKES SENSE TODAY.

McCormack & Dodge

a company of
The Data & Tradelect Corporation

McCormack & Dodge Corporation, 1225 Worcester Road, Natick, MA 01700
Sales and Support offices throughout North and South America, Europe, Asia, Australia and Africa. 800-343-0325, Telex: 710-325-0329